PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
ARP2514

COMPACT DISC PLAYER

PD-65 KU

PD-S901 HEM, HB, SD

- **Refer to the service manual ARP2297 for PD – 41.**
- **This manual is applicable to the following : PD – 65/KU ; PD – S901/HEM, HB and SD.**

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 300 Allstate Parkway Markham, Ontario L3R 0P2 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

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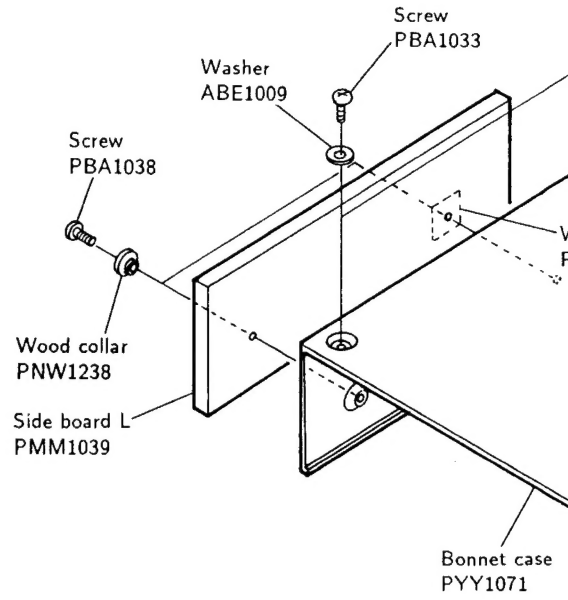
1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

PD-65/KU, PD-S901/HEM, HB, SD and PD-41/KU have the same construction except for the following :

Mark	Symbol & Description	Part No.					Remarks
		PD−41 /KU	PD−65 /KU	PD−S901 /HEM	PD−S901 /HB	PD−S901 /SD	
NSP	MOTHER BOARD assembly	PMW1486	.....	.....	.....	.....	
◉	MOTHER BOARD assembly	.....	PWM1647	PWM1648	PWM1649	PWM1650	
◉	MAIN BOARD assembly	PWZ2150	.....	.....	.....	.....	
NSP	MAIN BOARD assembly	.....	PWZ2382	PWZ2383	PWZ2384	PWZ2385	
NSP	PRIMARY BOARD assembly	PWZ2158	PWZ2158	PWZ2159	PWZ2161	PWZ2160	
◉	ANALOG BOARD assembly	PWM1490	PWM1643	PWM1643	PWM1644	PWM1643	
◉	SUB BOARD assembly	PWM1493	PWM1493	PWM1494	PWM1494	PWM1494	
NSP	FUNCTION A BOARD assembly	PWZ2168	PWZ2168	PWZ2169	PWZ2169	PWZ2169	
NSP	FUNCTION B BOARD assembly	PWZ2170	PWZ2170	PWZ2171	PWZ2171	PWZ2171	
	FL sheet	PAM1514	PAM1290	PAM1251	PAM1251	PAM1514	
NSP	Badge	PAN1035	AAM1001	PAN1035	PAN1035	PAN1035	
NSP	Front panel	PAN1211	PAN1254	PAN1255	PAN1255	PAN1255	
	Front panel assembly	PEA1167	PEA1239	PEA1240	PEA1240	PEA1240	
	Side sash	.....	PAN1220	.....	.....	.....	For control panel
	Side rubber	PEB1180	.....	PEB1180	PEB1180	PEB1180	
	Wood coller	.....	PNW1238	.....	.....	.....	For side board
NSP	Wood spacer	.....	PEC1001	.....	.....	.....	For side board
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1036	PDG1013	
⚠	Power transformer (8VA)	PTT1166	PTT1166	PTT1167	PTT1167	PTT1168	
⚠	Power transformer (15VA)	PTT1206	PTT1206	PTT1207	PTT1207	PTT1208	
⚠	Strain relief	CM−22C	CM−22C	CM−22B	CM−22B	CM−22B	
⚠	Voltage selector	.....	.....	.....	.....	PSB1002	
	33P F.F.C / 30V	PDD1094	PDD1094	.....	.....	.....	
	31P F.F.C / 30V	.....	.....	PDD1092	PDD1092	PDD1092	
	Protector F	PHA1145	PHA1171	PHA1145	PHA1145	PHA1145	For packing
	Protector R	PHA1146	PHA1172	PHA1146	PHA1146	PHA1146	For packing
	Packing case	PHG1677	PHG1813	PHG1812	PHG1812	PHG1812	
	Screw	.....	PBA1038	.....	.....	.....	For side board
	Side board L	.....	PMM1039	.....	.....	.....	
	Side board R	.....	PMM1040	.....	.....	.....	
NSP	Rear base	PNA1538	PNA1861	PNA1858	PNA1859	PNA1860	
NSP	Under base	PNA1683	PNA1884	PNA1683	PNA1683	PNA1683	
NSP	Shield plate	PNB1299	PNB1407	PNB1299	PNB1299	PNB1299	
NSP	L angle	PNB1316	PNB1406	PNB1316	PNB1316	PNB1316	
	Control panel	PNW2066	PNW2065	PNW2066	PNW2066	PNW2066	
	Mini plug cord	PDE−319	PDE−319	.....	.....	.....	
	Remote control unit	PWW1058	PWW1057	PWW1058	PWW1058	PWW1058	
	Operating instructions	PRE1149	PRE1165	PRE1165	PRE1165	PRE1165	English, French
	Operating instructions	.....	.....	PRF1058	.....	.....	German,Italian, Dutch,Swedish, Spanish, Portuguese



•Exploded views for PD-65/KU only.

LIST of assemblies (PD-41, PD-65, PD-S901)

- MOTHER BOARD assembly
  - MAIN BOARD assembly
  - PRIMARY BOARD assembly
- SUB BOARD assembly
  - FUNCTION A BOARD assembly
  - FUNCTION B BOARD assembly

2. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56×10¹ → 561 ..... RD1/8PM[5][6][1]J

47kΩ → 47×10³ → 473 ..... RD1/4PS[4][7][3]J

0.5Ω → 0R5 ..... RN2H[0][R][5]K

1Ω → 010 ..... RS1P[0][1][0]K

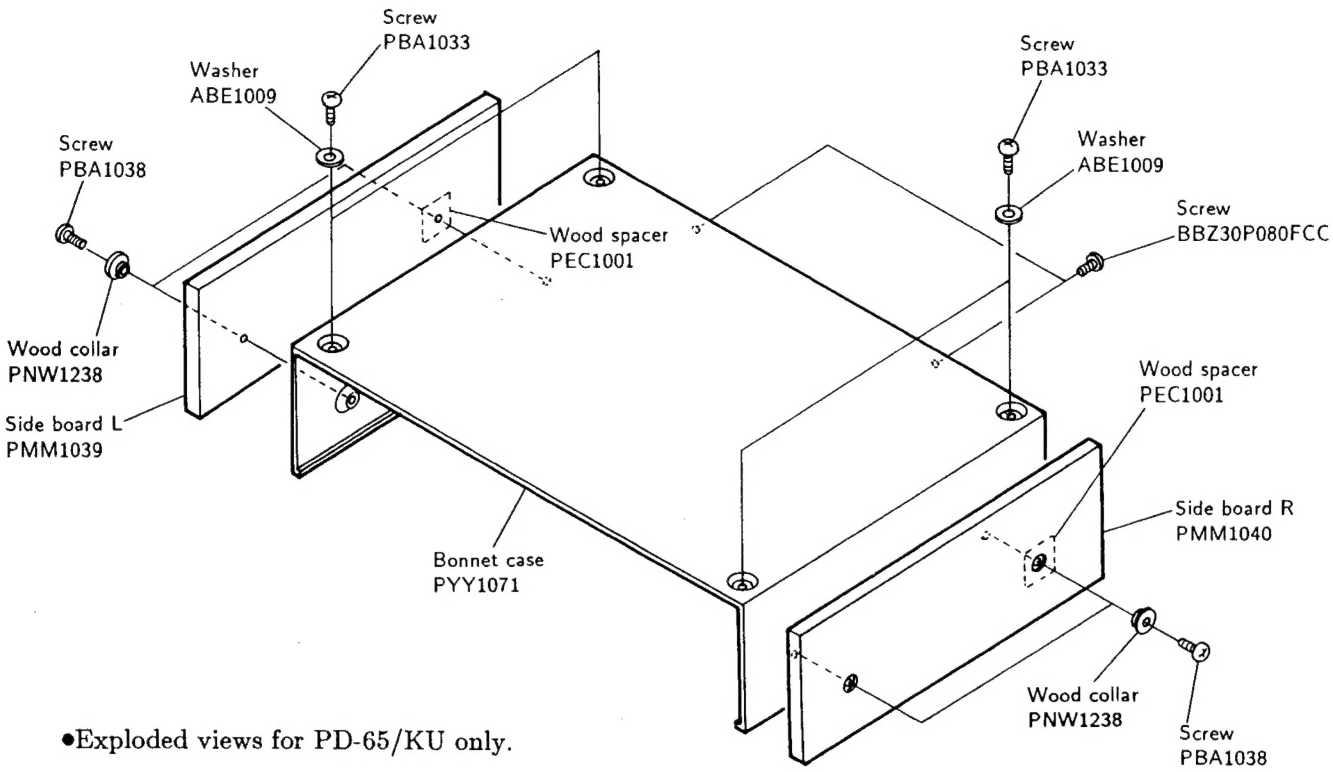
Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ→ 562×10¹ →5621 ..... RN1/4PC[5][6][2][1]F

FOR PD－65/KU, PD－S901/HEM,HB AND SD types.

• For part numbers of PCB assemblies, refer to page 2.

Mark	No.	Description	Parts No.
		MAIN BOARD ASSEMBLY	
		SEMICONDUCTORS	
⚠	IC11	REGULATOR IC	NJM7805FA
	IC12	REGULATOR IC	NJM7905FA
⚠	IC13	REGULATOR IC	NJM7808FA
⚠	IC14	REGULATOR IC	NJM7908FA
⚠	IC30－32	IC PROTECTOR	ICP－N10
	IC60	SYSTEM RESET IC	M51957AL
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372S
⚠	IC201	POWER OP－AMP IC	LA6520
⚠	IC202	POWER OP－AMP IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC331	IC	MC74HCU04N
⚠	Q51	TRANSISTOR	2SB1187
	Q101	TRANSISTOR	2SA854S
	Q240	TRANSISTOR	2SA933S
	Q241	TRANSISTOR	2SC1740S
	Q301	TRANSISTOR	DTC124ES
	Q302	TRANSISTOR	DTA124ES
	Q321,331	TRANSISTOR	DTC124ES
	Q351	TRANSISTOR	DTA124ES
	Q391	TRANSISTOR	DTC124ES
⚠	D11－14	DIODE	11ES2
⚠	D25		RB－152LF
⚠	D51,52	DIODE	11ES2
⚠	D53	ZENER DIODE	MTZ27C
⚠	D54	ZENER DIODE	MTZJ20A
⚠	D56	DIODE	11ES2
	D321	DIODE	1SS254
	D391－394	DIODE(PD－65 only)	1SS254
	D395－399	DIODE	1SS254
		COILS, FILTERS	
	L30	AXIAL INDUCTOR	LAU010K
	L301	RADIAL INDUCTOR	LFA010K
	L332	COIL	PTL1003
	L391,392	AXIAL COIL	LAUR22K
	L393	AXIAL INDUCTOR	LAU010K
		CAPACITORS	
	C10,11	CERAMIC CAPACITOR	PCL1029
	C13－20	CERAMIC CAPACITOR	PCL1029
	C21,22	ELECT. CAPACITOR	CEAS222M25
	C23	ELECT. CAPACITOR	CEAS102M25
	C25,26	ELECT. CAPACITOR	CEAS222M16
	C27,28	ELECT. CAPACITOR	CEAS222M25
	C29,30	ELECT. CAPACITOR	CEAS102M16
	C51	ELECT. CAPACITOR	CEAS101M50
	C52	ELECT. CAPACITOR	CEAS221M50
	C53	ELECT. CAPACITOR	CEAS100M50
	C54	ELECT. CAPACITOR	CEAS470M50
	C55	ELECT. CAPACITOR	CEAS330M35
	C56	ELECT. CAPACITOR	CEAS101M50
	C61	ELECT. CAPACITOR	CEASR33M50
	C62	ELECT. CAPACITOR	CEAS010M50
	C101,102	ELECT. CAPACITOR	CEAS101M50
	C103	CERAMIC CAPACITOR	CCDCH200J50
	C104	ELECT. CAPACITOR	CEAS101M10
	C105,106	ELECT. CAPACITOR	CEAS101M50
	C107,108	CERAMIC CAPACITOR	CGCYX103K25
	C110	CERAMIC CAPACITOR	CKCYF103Z50
	C151－154	ELECT. CAPACITOR	CEAS101M50
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158,159	MYLAR FILM CAPACITOR	CQMA104K50
	C160	ELECT. CAPACITOR	CEAS4R7M50
	C161	MYLAR FILM CAPACITOR	CQMA104K50
	C162	ELECT. CAPACITOR	CEAS010M50
	C163	MYLAR FILM CAPACITOR	CQMA104K50
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C166	CERAMIC CAPACITOR	CCCSL101J50
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX10
	C170	CERAMIC CAPACITOR	CKCYB33
	C171,172	CERAMIC CAPACITOR	CKCYB47
	C202	CERAMIC CAPACITOR	CKCYF10
	C212	CERAMIC CAPACITOR	CKCYB27
	C216－219	ELECT. CAPACITOR	CEAS221M
	C232	CERAMIC CAPACITOR	CKCYF10
	C301	CERAMIC CAPACITOR	CGCYX10
	C302	ELECT. CAPACITOR	CEAS471M
	C303	ELECT. CAPACITOR	CEAS101M
	C304	CERAMIC CAPACITOR	CGCYX10
	C305	ELECT. CAPACITOR	CEAS221M
	C306	CERAMIC CAPACITOR	CKCYB15
	C307	CERAMIC CAPACITOR	CGCYX47
	C308	CERAMIC CAPACITOR	CGCYX10
	C309	ELECT. CAPACITOR	CEASR47M
	C310	CERAMIC CAPACITOR	CKCYF10
	C311	CERAMIC CAPACITOR	CKCYB10
	C313	CERAMIC CAPACITOR	CKCYF10
	C314	CERAMIC CAPACITOR	CGDYX10
	C331	CERAMIC CAPACITOR	CGCYX47
	C332	ELECT. CAPACITOR	CEAS101M
	C334	CERAMIC CAPACITOR	CGCYX10
	C335	ELECT. CAPACITOR	CEAS470M
	C336	AUDIO FILM CAPACITOR	CFTXA10
	C337	CERAMIC CAPACITOR	CCCSL471
	C339,340	CERAMIC CAPACITOR	CGCYX10
	C391	CERAMIC CAP.(PD－65 only)	CGCYX10
	C392	CERAMIC CAP.(PD－65 only)	CCCSL101
	C395	CERAMIC CAPACITOR	CCDSL100
		RESISTORS	
	VR102	VR(22k)	VRTB6VS2
	VR103	VR(1K)	VRTB6VS1
	VR151,152	VR(22k)	VRTB6VS2
		Other resistors	RD1/6PM□
		OTHERS	
	CN101	CONNECTOR	52045－161
	CN351	CONNECTOR(PD－65)	HLEM33S－
	CN351	CONNECTOR(PD－S901)	HLEM31S－
	JA331	OPTICAL OUTPUT JACK	TOTX178
	JA332	JACK	PKB1004
	JA391,392	JACK(PD－65 only)	RKN1004
	JA393	JACK	RKN1004
		PRIMARY BOARD ASSEMBLY	
		SWITCH	
⚠	S1	SWITCH	PSA－009
		CAPACITOR	
⚠	C1	CAPACITOR (0.01μF)	VCG－048
		OTHER	
⚠		TERMINAL(PD－65)	RKC－061



•Exploded views for PD-65/KU only.

Mark	No.	Description	Parts No.
	C169	CERAMIC CAPACITOR	CGCYX103K25
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171,172	CERAMIC CAPACITOR	CKCYB472K50
	C202	CERAMIC CAPACITOR	CKCYF103Z50
	C212	CERAMIC CAPACITOR	CKCYB272K50
	C216−219	ELECT. CAPACITOR	CEAS221M25
	C232	CERAMIC CAPACITOR	CKCYF103Z50
	C301	CERAMIC CAPACITOR	CGCYX103K25
	C302	ELECT. CAPACITOR	CEAS471M10
	C303	ELECT. CAPACITOR	CEAS101M50
	C304	CERAMIC CAPACITOR	CGCYX103K25
	C305	ELECT. CAPACITOR	CEAS221M25
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CGCYX103K25
	C309	ELECT. CAPACITOR	CEASR47M50
	C310	CERAMIC CAPACITOR	CKCYF103Z50
	C311	CERAMIC CAPACITOR	CKCYB102K50
	C313	CERAMIC CAPACITOR	CKCYF103Z50
	C314	CERAMIC CAPACITOR	CGDYX104M25
	C331	CERAMIC CAPACITOR	CGCYX473K25
	C332	ELECT. CAPACITOR	CEAS101M25
	C334	CERAMIC CAPACITOR	CGCYX103K25
	C335	ELECT. CAPACITOR	CEAS470M25
	C336	AUDIO FILM CAPACITOR	CFTXA103J50
	C337	CERAMIC CAPACITOR	CCCSL471J50
	C339,340	CERAMIC CAPACITOR	CGCYX103K25
	C391	CERAMIC CAP.(PD−65 only)	CGCYX103K25
	C392	CERAMIC CAP.(PD−65 only)	CCCSL101J50
	C395	CERAMIC CAPACITOR	CCDSL100D50
RESISTORS			
	VR102	VR(22k)	VRTB6VS223
	VR103	VR(1K)	VRTB6VS102
	VR151,152	VR(22k)	VRTB6VS223
		Other resistors	RD1/6PM□□□J
OTHERS			
	CN101	CONNECTOR	52045−1610
	CN351	CONNECTOR(PD−65)	HLEM33S−1
	CN351	CONNECTOR(PD−S901)	HLEM31S−1
	JA331	OPTICAL OUTPUT JACK	TOTX178
	JA332	JACK	PKB1004
	JA391,392	JACK(PD−65 only)	RKN1004
	JA393	JACK	RKN1004

PRIMARY BOARD ASSEMBLY

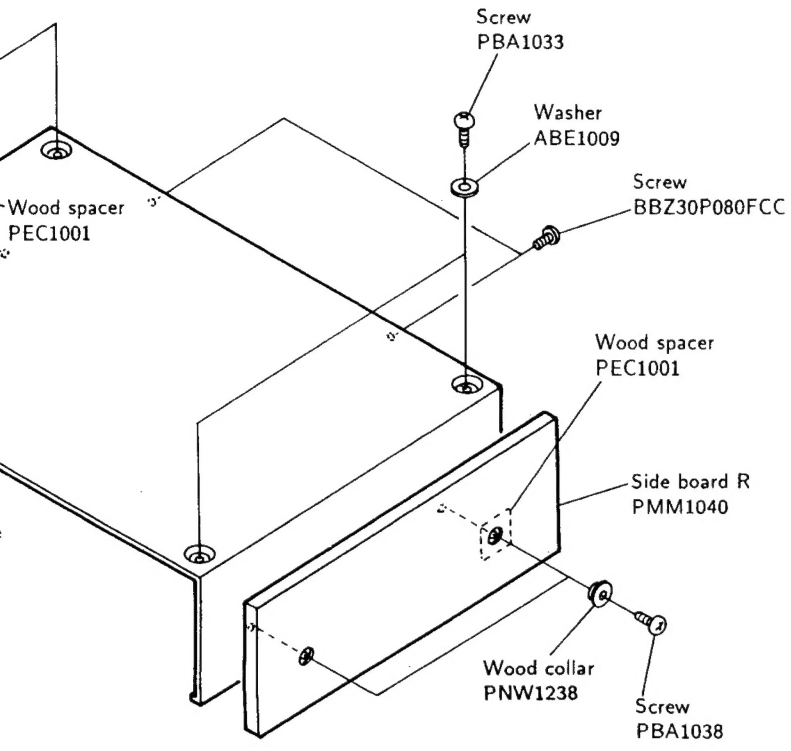
Mark	No.	Description	Parts No.
SWITCH			
⚠	S1	SWITCH	PSA−009
CAPACITOR			
⚠	C1	CAPACITOR (0.01μF)	VCG−048
OTHER			
⚠		TERMINAL(PD−65)	RKC−061

ANALOG BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC501,502	REGULATOR IC	NJM7805FA
	IC512	LOGIC IC	TC74HCU04AP
	IC513	IC	PD0116A
	IC522,523	D/A CONVERTER IC	PD2028B
	IC554,555	OP−AMP IC	NJM5532DD
⚠	IC601	REGULATOR IC	NJM7815FA
⚠	IC602	REGULATOR IC	NJM7915FA
⚠	IC620,621	IC PROTECTOR	ICP−N15
	Q521	TRANSISTOR	DTC124ES
	Q522,523	TRANSISTOR	DTA124ES
	Q524,525	TRANSISTOR	DTC124ES
	Q554−557	TRANSISTOR	2SC3068
	Q558	N−FET	2SK246
	Q559,560	P−FET	2SJ103
	Q561	N−FET	2SK246
	Q562,563	TRANSISTOR	2SC3068
	D521	DIODE	1SS254
	D550,551	DIODE	1SS254
	D570,571	DIODE	1SS254
⚠	D610−613	DIODE	10DF2
⚠	D620−627	DIODE	10DF2
COILS, FILTERS			
	L511,512	AXIAL INDUCTOR	LAU010K
	L513,514	AMORPHOUS BEAD	PTH1006
	L518,519	FILTER	PTH1011
	L522,523	AXIAL INDUCTOR	LAU010K
	L525,526	AXIAL INDUCTOR	LAU010K
	L551−554	FERRITE BEADS	VTH1013
	F520,521	FILTER	VTH1001
CAPACITORS			
	C501,502	AUDIO FILM CAPACITOR	CFTXA104J50
	C503,504	CERAMIC CAPACITOR	PCL1029
	C505	ELECT. CAPACITOR	CEAS101M25
	C506,507	AUDIO FILM CAPACITOR	CFTXA104J50
	C510	AUDIO FILM CAPACITOR	CFTXA473J50
	C511	CERAMIC CAPACITOR	PCL1029
	C512	AUDIO FILM CAPACITOR	CFTXA103J50
	C514	CERAMIC CAPACITOR	CGCYF473Z25
	C515	AUDIO FILM CAPACITOR	CFTXA103J50
	C516	ELECT. CAPACITOR	CEAS102M16
	C517,518	CERAMIC CAPACITOR	CCCCH120J50
	C519	ELECT. CAPACITOR	CEAS102M16
	C520	ELECT. CAPACITOR	CEAS470M50
	C521	MYLAR FILM CAPACITOR	CQMA473J50
	C522	AUDIO FILM CAPACITOR	CFTXA682J50
	C523	CERAMIC CAPACITOR	PCL1029
	C524	ELECT. CAPACITOR	CEAS102M16
	C526	MYLAR FILM CAPACITOR	CQMA104J50
	C527	MYLAR FILM CAPACITOR	CQMA473J50
	C528	ELECT. CAPACITOR	CEAS102M16
	C529	MYLAR FILM CAPACITOR	CQMA473J50
	C530,531	AUDIO FILM CAPACITOR	CFTXA682J50
	C532	ELECT. CAPACITOR	CEAS102M16
	C534	AUDIO FILM CAPACITOR	CFTXA104J50
	C535	ELECT. CAPACITOR	CEAS102M16
	C538,539	CERAMIC CAPACITOR	CCCCH120J50
	C540,541	CERAMIC CAPACITOR	CCDCH221J50
	C542,543	CERAMIC CAPACITOR	CCCCH181J50
	C544,545	CERAMIC CAPACITOR	CCCCH330J50
	C546,547	CERAMIC CAPACITOR	CGCYF473Z25
	C548	CERAMIC CAPACITOR	CCCCH080D50
	C549	CERAMIC CAPACITOR	CCCCH080D50
	C550,551	CERAMIC CAPACITOR	CCCCH181J50
	C552,553	CERAMIC CAPACITOR	CCCCH330J50
	C554,555	MYLAR FILM CAPACITOR	CQMA104J50
	C556,557	ELECT. CAPACITOR	CEAS102M16
	C558,559	MYLAR FILM CAPACITOR	CQMA104J50
	C560−563	CERAMIC CAPACITOR	CCCCH470J50
	C564,565	MYLAR FILM CAPACITOR	CQMA681J50
	C566,567	MYLAR FILM CAPACITOR	CQMA562J50
	C568−571	ELECT. CAPACITOR	CEAS471M50
	C572,573	(47/50)	PCH1072
	C576,577	ELECT. CAPACITOR	CEAS102M16
	C578,579	CERAMIC CAPACITOR	PCL1029
	C581	MYLAR FILM CAPACITOR	CQMA104J50
	C582,583	AUDIO FILM CAPACITOR	CFTXA683J50
	C586	AUDIO FILM CAPACITOR	CFTXA473J50
	C587,588	ELECT. CAPACITOR	CEANP220M25
	C589	ELECT. CAPACITOR	CEAS102M16
	C590	MYLAR FILM CAPACITOR	CQMA104J50
	C591	AUDIO FILM CAPACITOR	CFTXA682J50
	C593,594	ELECT. CAPACITOR	CEAS102M16
	C595	MYLAR FILM CAPACITOR	CQMA104J50
	C597	ELECT. CAPACITOR	CEAS102M16
	C601	ELECT. CAPACITOR	CENA102M35
	C604,605	ELECTR. CAPACITOR	PCH1102
	C606,607	ELECT. CAPACITOR	CENA102M35
	C608−618	CERAMIC CAPACITOR	PCL1029
RESISTORS			
	R502	CARBON FILM RESISTOR	RD1/4PM331J
	R514	CARBON FILM RESISTOR	RD1/4PM331J
	R540−567	CARBON FILM RESISTOR	RD1/4PM□□□J
	R568−581	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R582−585	CARBON FILM RESISTOR	RDR1/2PM□□□J
	R588,589	CARBON FILM RESISTOR	RDR1/2PM271J
	R590,591	CARBON FILM RESISTOR	RDR1/4PM511J
	R593,594	CARBON FILM RESISTOR	RDR1/4PM331J
		Other resistors	RD1/6PM□□□J
OTHERS			
	JA551	1P PIN JACK(W)	RKB1010
	JA552	1P PIN JACK (R)	RKB1011
	X512	XTAL RES (OSC)	PSS1011
	CN501	CONNECTOR(10P)	KPC10

FUNCTION A BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	IC401	MICROCOMPUTER,IC	PD4329A



ANALOG BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
⚠	IC501,502	REGULATOR IC	NJM7805FA
	IC512	LOGIC IC	TC74HCU04AP
	IC513	IC	PD0116A
	IC522,523	D/A CONVERTER IC	PD2028B
	IC554,555	OP−AMP IC	NJM5532DD
⚠	IC601	REGULATOR IC	NJM7815FA
⚠	IC602	REGULATOR IC	NJM7915FA
⚠	IC620,621	IC PROTECTOR	ICP−N15
	Q521	TRANSISTOR	DTC124ES
	Q522,523	TRANSISTOR	DTA124ES
	Q524,525	TRANSISTOR	DTC124ES
	Q554−557	TRANSISTOR	2SC3068
	Q558	N−FET	2SK246
	Q559,560	P−FET	2SJ103
	Q561	N−FET	2SK246
	Q562,563	TRANSISTOR	2SC3068
	D521	DIODE	1SS254
	D550,551	DIODE	1SS254
	D570,571	DIODE	1SS254
⚠	D610−613	DIODE	10DF2
⚠	D620−627	DIODE	10DF2
COILS, FILTERS			
	L511,512	AXIAL INDUCTOR	LAU010K
	L513,514	AMORPHOUS BEAD	PTH1006
	L518,519	FILTER	PTH1011
	L522,523	AXIAL INDUCTOR	LAU010K
	L525,526	AXIAL INDUCTOR	LAU010K
	L551−554	FERRITE BEADS	VTH1013
	F520,521	FILTER	VTH1001
CAPACITORS			
	C501,502	AUDIO FILM CAPACITOR	CFTXA104J50
	C503,504	CERAMIC CAPACITOR	PCL1029
	C505	ELECT. CAPACITOR	CEAS101M25
	C506,507	AUDIO FILM CAPACITOR	CFTXA104J50
	C510	AUDIO FILM CAPACITOR	CFTXA473J50
	C511	CERAMIC CAPACITOR	PCL1029
	C512	AUDIO FILM CAPACITOR	CFTXA103J50
	C514	CERAMIC CAPACITOR	CGCYF473Z25
	C515	AUDIO FILM CAPACITOR	CFTXA103J50
	C516	ELECT. CAPACITOR	CEAS102M16
	C517,518	CERAMIC CAPACITOR	CCCCH120J50
	C519	ELECT. CAPACITOR	CEAS102M16
	C520	ELECT. CAPACITOR	CEAS470M50
	C521	MYLAR FILM CAPACITOR	CQMA473J50
	C522	AUDIO FILM CAPACITOR	CFTXA682J50
	C523	CERAMIC CAPACITOR	PCL1029
	C524	ELECT. CAPACITOR	CEAS102M16
	C526	MYLAR FILM CAPACITOR	CQMA104J50
	C527	MYLAR FILM CAPACITOR	CQMA473J50
	C528	ELECT. CAPACITOR	CEAS102M16
	C529	MYLAR FILM CAPACITOR	CQMA473J50
	C530,531	AUDIO FILM CAPACITOR	CFTXA682J50
	C532	ELECT. CAPACITOR	CEAS102M16
	C534	AUDIO FILM CAPACITOR	CFTXA104J50
	C535	ELECT. CAPACITOR	CEAS102M16
	C538,539	CERAMIC CAPACITOR	CCCCH120J50
	C540,541	CERAMIC CAPACITOR	CCDCH221J50
	C542,543	CERAMIC CAPACITOR	CCCCH181J50
	C544,545	CERAMIC CAPACITOR	CCCCH330J50
	C546,547	CERAMIC CAPACITOR	CGCYF473Z25
	C548	CERAMIC CAPACITOR	CCCCH080D50
	C549	CERAMIC CAPACITOR	CCCCH080D50
	C550,551	CERAMIC CAPACITOR	CCCCH181J50
	C552,553	CERAMIC CAPACITOR	CCCCH330J50
	C554,555	MYLAR FILM CAPACITOR	CQMA104J50
	C556,557	ELECT. CAPACITOR	CEAS102M16
	C558,559	MYLAR FILM CAPACITOR	CQMA104J50
	C560−563	CERAMIC CAPACITOR	CCCCH470J50
	C564,565	MYLAR FILM CAPACITOR	CQMA681J50
	C566,567	MYLAR FILM CAPACITOR	CQMA562J50
	C568−571	ELECT. CAPACITOR	CEAS471M50
	C572,573	(47/50)	PCH1072
	C576,577	ELECT. CAPACITOR	CEAS102M16
	C578,579	CERAMIC CAPACITOR	PCL1029
	C581	MYLAR FILM CAPACITOR	CQMA104J50
	C582,583	AUDIO FILM CAPACITOR	CFTXA683J50
	C586	AUDIO FILM CAPACITOR	CFTXA473J50
	C587,588	ELECT. CAPACITOR	CEANP220M25
	C589	ELECT. CAPACITOR	CEAS102M16
	C590	MYLAR FILM CAPACITOR	CQMA104J50
	C591	AUDIO FILM CAPACITOR	CFTXA682J50
	C593,594	ELECT. CAPACITOR	CEAS102M16
	C595	MYLAR FILM CAPACITOR	CQMA104J50
	C597	ELECT. CAPACITOR	CEAS102M16
	C601	ELECT. CAPACITOR	CENA102M35
	C604,605	ELECTR. CAPACITOR	PCH1102
	C606,607	ELECT. CAPACITOR	CENA102M35
	C608−618	CERAMIC CAPACITOR	PCL1029
RESISTORS			
	R502	CARBON FILM RESISTOR	RD1/4PM331J
	R514	CARBON FILM RESISTOR	RD1/4PM331J
	R540−567	CARBON FILM RESISTOR	RD1/4PM□□□J
	R568−581	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R582−585	CARBON FILM RESISTOR	RDR1/2PM□□□J
	R588,589	CARBON FILM RESISTOR	RDR1/2PM271J
	R590,591	CARBON FILM RESISTOR	RDR1/4PM511J
	R593,594	CARBON FILM RESISTOR	RDR1/4PM331J
		Other resistors	RD1/6PM□□□J
OTHERS			
	JA551	1P PIN JACK(W)	RKB1010
	JA552	1P PIN JACK (R)	RKB1011
	X512	XTAL RES (OSC)	PSS1011
	CN501	CONNECTOR(10P)	KPC10
	Q402,403	TRANSISTOR	DTC124ES
	Q404,405	TRANSISTOR	DTA124ES
	D401	LED	AA0045
	D402	LED	BR0045
	D411−416	DIODE	1SS254
SWITCHES			
	S401−406	SWITCH	PSG−065
COILS, FILTERS			
	L401,402	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C401,402	ELECT. CAPACITOR	CEJA470M16
	C403	CERAMIC CAPACITOR	CKPUYF103Z25
	C404	ELECT. CAPACITOR	CEJA470M16
	C405	CERAMIC CAPACITOR	CKPUYF103Z25
	C406−408	CERAMIC CAPACITOR	CGCYX103K25
	C409	CERAMIC CAPACITOR	CKCYF103Z50
	C411−416	AXIAL CERAMIC C.	CCPUCH100J50
RESISTORS			
		All resistors	RD1/6PM□□□J
OTHERS			
	CN401	CONNECTOR(PD−65)	HLEM33R−1
	CN401	CONNECTOR(PD−S901)	HLEM31R−1
	V401	FL TUBE	PEL1025
	X401	CERAMIC RESONATOR	VSS1014
		REMOTE SENSOR	SBX1610−51

FUNCTION A BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	IC401	MICROCOMPUTER,IC	PD4329A

FUNCTION B BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D403	LED	SLH−34YC3H3
	D404,405	LED	SLH−34VC3H3
	D417	DIODE	1SS254
SWITCHES			
	S407,408	SWITCH	PSG−065
CAPACITOR			
	C417	AXIAL CERAMIC C.	CCPUCH100J50

3. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS

1. RESISTORS :
   Indicated in Ω, 1/4 W, 1/6 W,1/8 W ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2. CAPACITORS :
   Indicated in capacity (μF)/voltage(V) unless otherwise noted p; pF.
   Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
   ; DC voltage (V) at play state.
   ⇦mA ; DC current at play state.
   ; Value in ( ) is DC current at stop state.

4. OTHERS :
   ➡ ; Signal route
   ⊘ ; Adjustment point
   ▼(red) ; Measurement point
   The ⚠ mark found on some component parts indicates the inportance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

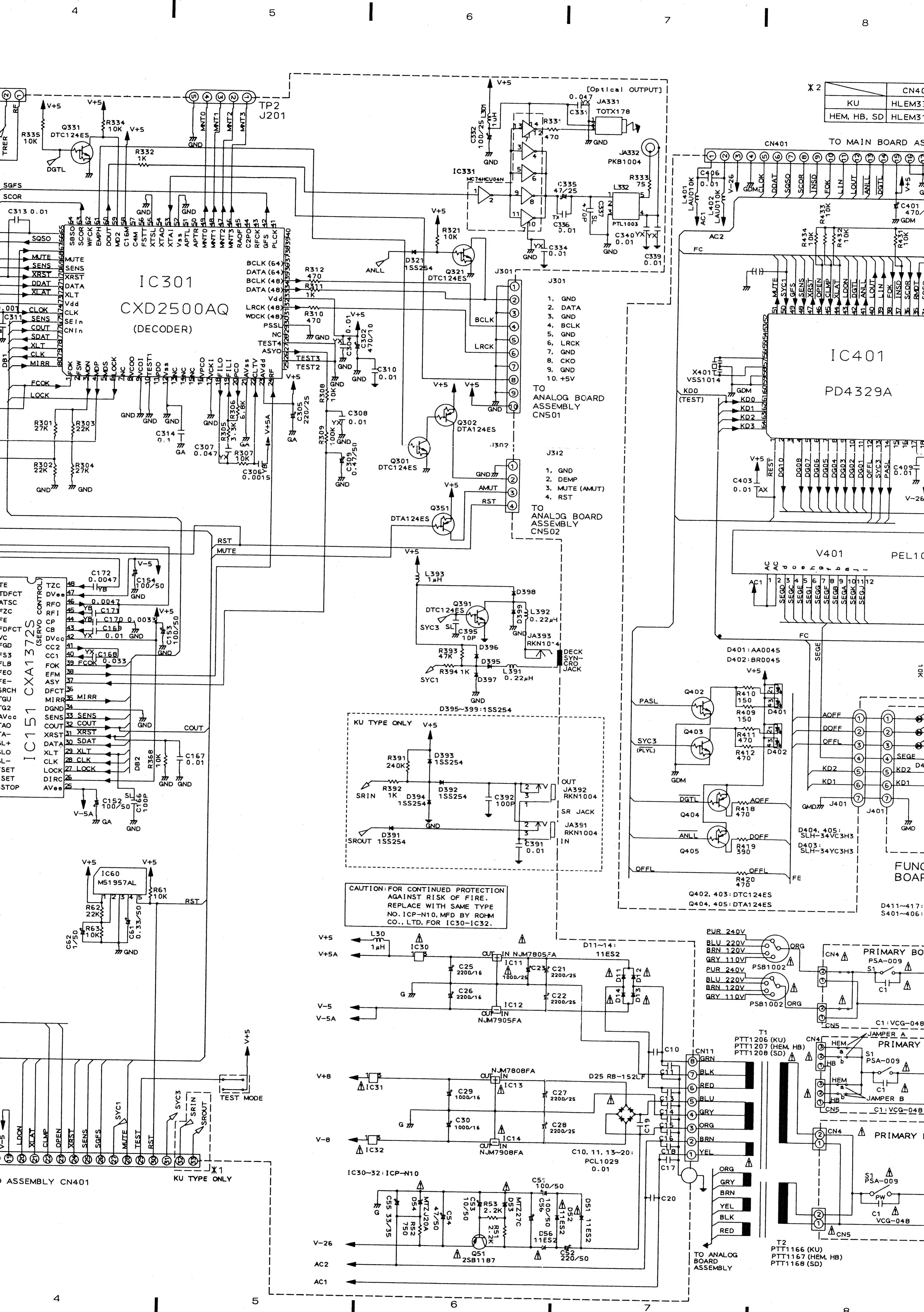
5. SWITCHES : (The underlined indicates the switch position)
   PRIMARY BOARD ASSEMBLY
   S 1 : POWER

   FUNCTION A BOARD ASSEMBLY
   S 401 : ⏭ ⏮ TRACK SEARCH
   S 402 : ⏮
   S 403 : PAUSE (⏸)
   S 404 : PLAY (▷)
   S 405 : OPEN/CLOSE (⏏)
   S 406 : STOP (⏏)

   FUNCTION B BOARD ASSEMBLY
   S 407 : DISPLAY OFF
   S 408 : OUTPUT

※1

	CN351
KU	HLEM33S-1
HEM, HB, SD	HLEM31S-1



4
5
6
7
8
TP2
J201
MNT0
MNT1
MNT2
MNT3
Q331
DTC124ES
R335 10K
R334 10K
R332 1K
DGTL
SGFS
SCOR
C313 0.01
IC301
CXD2500AQ
(DECODER)
SQSO
MUTE
SENS
XRST
DDAT
XLAT
CLOK
COUT
SDAT
XLT
CLK
MIRR
FCOK
LOCK
BCLK (64)
DATA (64)
BCLK (48)
DATA (48)
LRCK (48)
WDCK (48)
R312 470
R311 1K
R310 470
C302 470/10
C304 0.01
C310 0.01
C305 220/25
R308 10K
R309 100K
C308 0.01
C309 0.47/50
R301 27K
R303 22K
R302 22K
R304 27K
R305 3.3K
R306 6.8K
R307 10K
C307 0.047
C306 0.0015
C314 0.1
[Optical OUTPUT]
JA331
TOTX178
C331 0.047
R331 470
L301 1uH
C332 100/25
IC331
MC74HCU04N
C335 47/25
C336 0.01
C337 SL
L332
PTL1003
R333 75
JA332
PKB1004
C340 0.01
C339 0.01
C334 0.01
R321 10K
D321 1SS254
Q321 DTC124ES
ANLL
J301
1. GND
2. DATA
3. GND
4. BCLK
5. GND
6. LRCK
7. GND
8. CKO
9. GND
10. +5V
TO ANALOG BOARD ASSEMBLY CN501
Q302 DTA124ES
Q301 DTC124ES
J302
J312
1. GND
2. DEMP
3. MUTE (AMUT)
4. RST
AMUT
RST
TO ANALOG BOARD ASSEMBLY CN502
Q351 DTA124ES
IC151 CXA1372S (SERVO CONTROL)
C172 0.0047
C154 100/50
C171 0.0047
C170 0.0033
C169 0.01
C153 100/50
C168 0.033
C167 0.01
R368 10K
C152 100/50
C166 100P
IC60
M51957AL
R61 10K
R62 22K
R63 10K
C61 0.33/50
C62 1/50
L393 1μH
Q391 DTC124ES
D398
D399
L392 0.22μH
JA393 RKN1004
DECK SYN-CRO JACK
C395 10P
R393 47K
R394 1K
D396
D395
D397
L391 0.22μH
SYC1
SYC3
D395~399:1SS254
KU TYPE ONLY
R391 240K
D393 1SS254
R392 1K
D394 1SS254
D392 1SS254
C392 100P
SRIN
JA392 RKN1004
SR JACK
JA391 RKN1004
D391 1SS254
SROUT
C391 0.01
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N10, MFD BY ROHM CO., LTD. FOR IC30-IC32.
TEST MODE
ASSEMBLY CN401
KU TYPE ONLY
※2
CN40
KU
HLEM31
HEM, HB, SD
HLEM31
CN401
TO MAIN BOARD AS
L401 LAU010K
L402 LAU010K
C406 0.01
C401 470/
R431 10K
R432 10K
R433 10K
R434 10K
IC401
PD4329A
X401
VSS1014
KD0 (TEST)
KD0
KD1
KD2
KD3
C403 0.01
C409 0.01
V401
PEL10
D401:AA0045
D402:BR0045
PASL
SYC3 (PLYL)
Q402
Q403
R410 150
R409 150
R411 470
R412 470
Q404
Q405
R418 470
R419 390
R420 470
AOFF
DOFF
OFFL
SEGE
J401
D404, 405: SLH-34VC3H3
D403: SLH-34YC3H3
Q402, 403: DTC124ES
Q404, 405: DTA124ES
FUNC BOAR
D411~417:
S401~406:
L30 1μH
IC30
IC31
IC32
IC11
IC12
IC13
IC14
NJM7805FA
NJM7905FA
NJM7808FA
NJM7908FA
C25 2200/16
C26 2200/16
C21 2200/25
C22 2200/25
C23 1000/25
C29 1000/16
C30 1000/16
C27 2200/25
C28 2200/25
D11~14: 11ES2
D25 RB-152LF
C10, 11, 13~20: PCL1029 0.01
IC30~32: ICP-N10
C55 33/35
D54 MTZJ20A
R52 750
C54 47/50
C53 10/50
R53 2.2K
R51 2.2K
D53 MTZ27C
C57 100/50
C56 100/50
D52 11ES2
D51 11ES2
D56 11ES2
C52 220/50
Q51 2SB1187
V-26
AC2
AC1
CN11
GRN
BLK
RED
BLU
GRY
ORG
BRN
YEL
TO ANALOG BOARD ASSEMBLY
T1
PTT1206 (KU)
PTT1207 (HEM, HB)
PTT1208 (SD)
T2
PTT1166 (KU)
PTT1167 (HEM, HB)
PTT1168 (SD)
PUR 240V
BLU 220V
BRN 120V
GRY 110V
PSB1002
PRIMARY BO
S1 PSA-009
C1: VCG-048
JAMPER A
JAMPER B
HEM
HB
CN4
CN5

※2	CN401
KU	HLEM33S-1
HEM, HB, SD	HLEM31S-1

※2 KU TYPE ONLY

[Optical OUTPUT]

JA331 TOTX178

JA332 PKB1004

IC331 MC74HCU04N

PTL1003

TO MAIN BOARD ASSEMBLY CN351

CN401

EXPECT FOR KU TYPE

SBX1610-51

IC401 PD4329A

X401 VSS1014

FUNCTION A BOARD ASSEMBLY

V401 PEL1025

FUNCTION B BOARD ASSEMBLY

D401:AA0045
D402:BR0045

Q402, 403:DTC124ES
Q404, 405:DTA124ES

D404, 405: SLH-34VC3H3
D403: SLH-34YC3H3

S407, S408 PSG-065

D411~417:1SS254
S401~406:PSG-065

J301

1. GND
2. DATA
3. GND
4. BCLK
5. GND
6. LRCK
7. GND
8. CKO
9. GND
10. +5V

TO ANALOG BOARD ASSEMBLY CN501

J312

1. GND
2. DEMP
3. MUTE (AMUT)
4. RST

TO ANALOG BOARD ASSEMBLY CN502

D395~399:1SS254

KU TYPE ONLY

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N10, MFD BY ROHM CO., LTD. FOR IC30-IC32.

IC30~32: ICP-N10

D11~14: 11ES2

C10, 11, 13~20: PCL1029 0.01

D25 RB-152LF

T1
PTT1206 (KU)
PTT1207 (HEM, HB)
PTT1208 (SD)

T2
PTT1166 (KU)
PTT1167 (HEM, HB)
PTT1168 (SD)

C1: VCG-048

PRIMARY BOARD ASSEMBLY (SD)

PRIMARY BOARD ASSEMBLY (HEM, HB)

PRIMARY BOARD ASSEMBLY (KU)

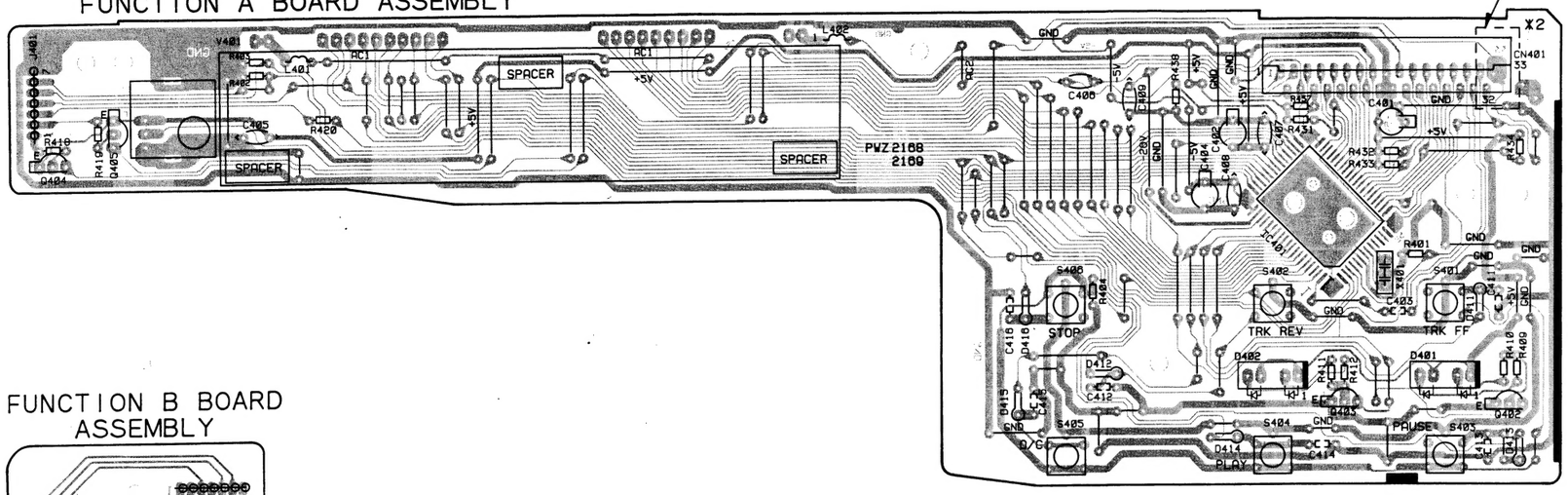
JAMPER A

JAMPER B

TO ANALOG BOARD ASSEMBLY

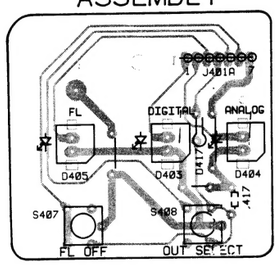
MAIN BOARD ASSEM

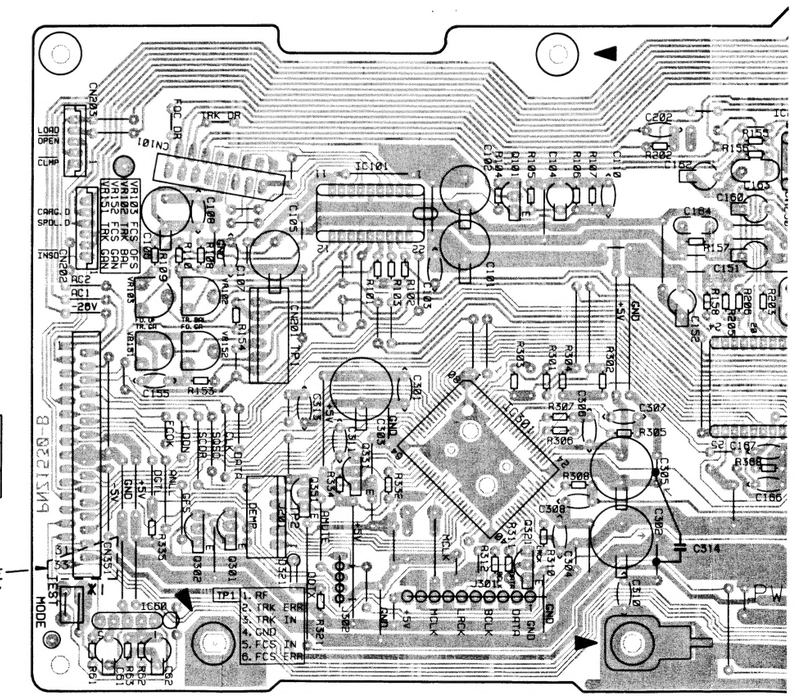
FUNCTION A BOARD ASSEMBLY



X2	CN401
KU	33pins
HEM,SD,HB	31pins

FUNCTION B BOARD ASSEMBLY





X1	CN351
KU	33pins
HEM,SD,HB	31pins

KU TYPE ONLY

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or	Transistor			Ceramic capacitor
	or	FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

Line Voltage Selection

Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wires A and B as follows.

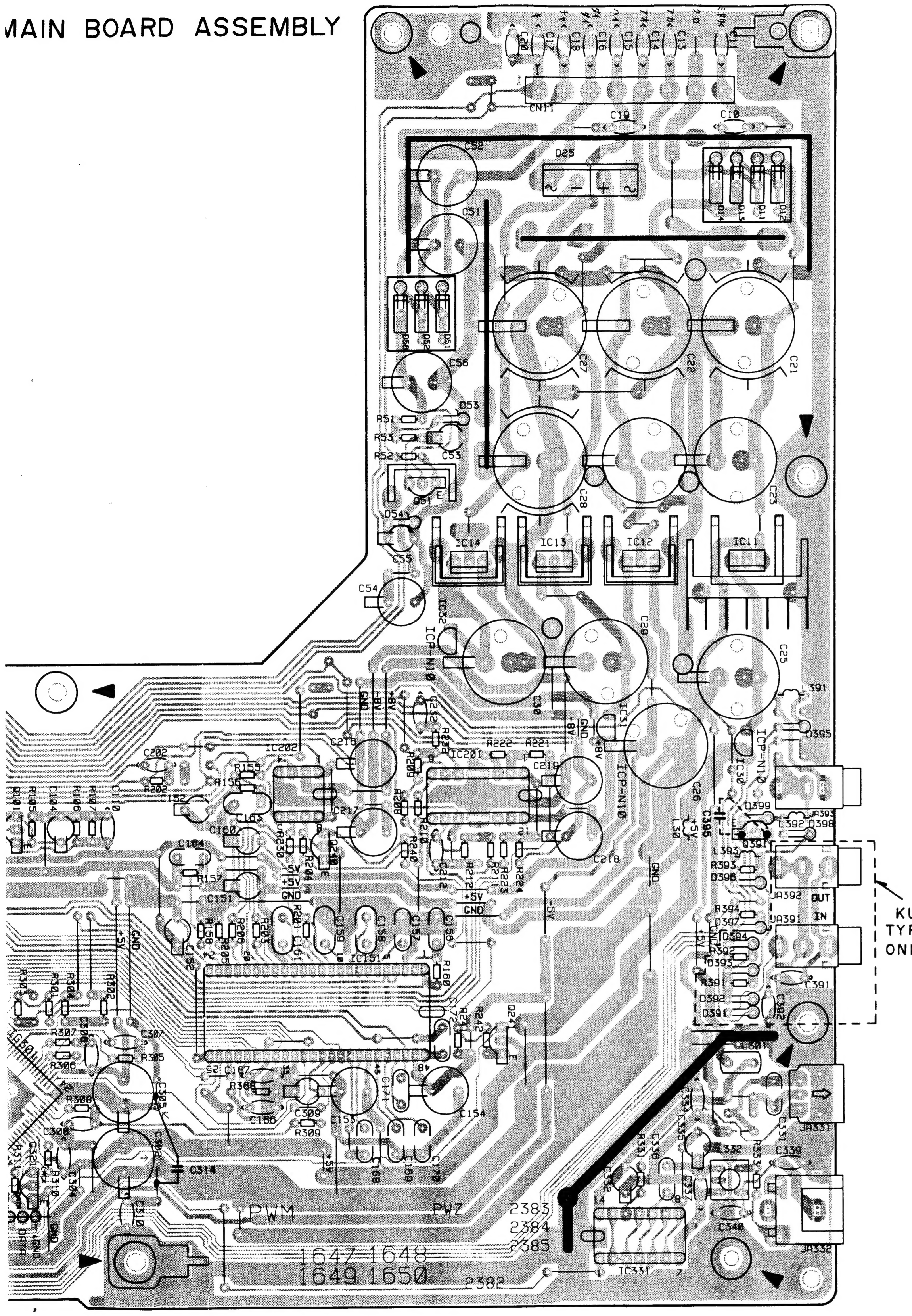
Voltage	Jumper wires A and B position
220 V-230 V	a
230 V-240 V	b

4. Stick the line voltage label on the rear panel.

Parts No.	Description
AXX-193	220 V label
AXX-192	240 V label

7 8 9 10 11

MAIN BOARD ASSEMBLY



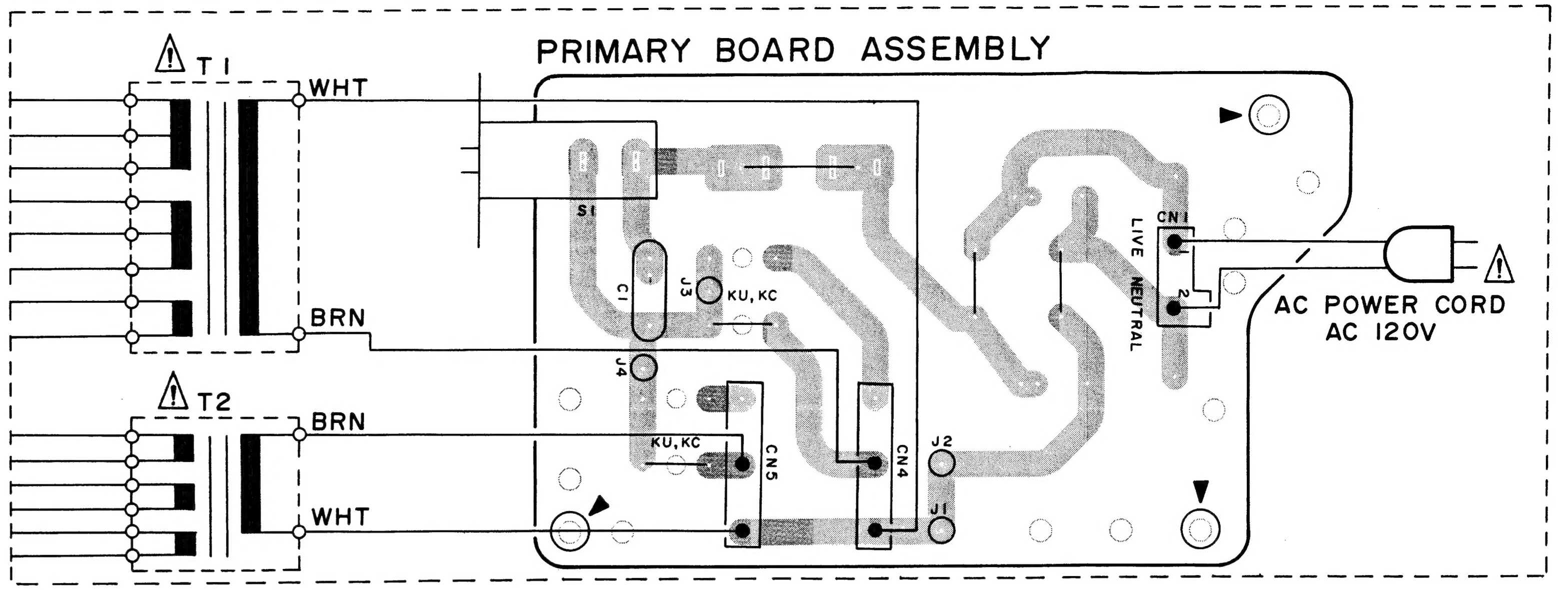
Q101 Q321

IC202 Q240 Q51 IC14 IC13 IC12 IC11

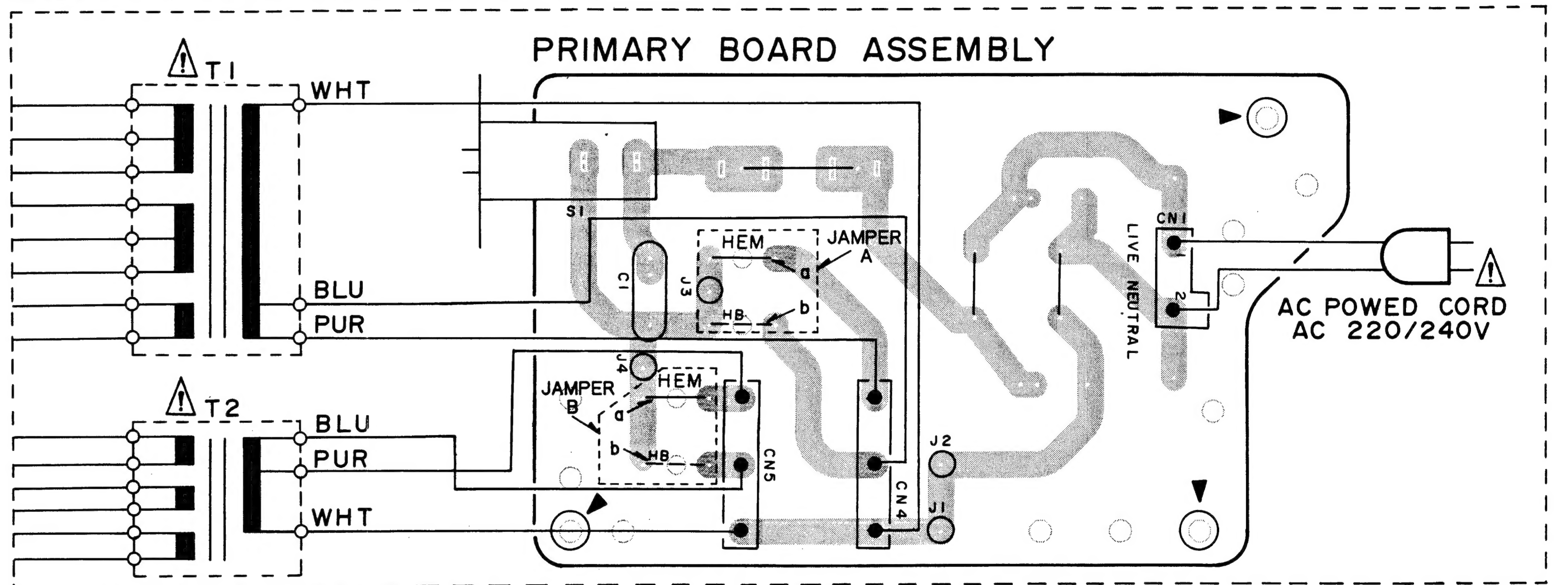
IC151 IC32 IC201 IC31 IC30

Q241 IC331 Q391

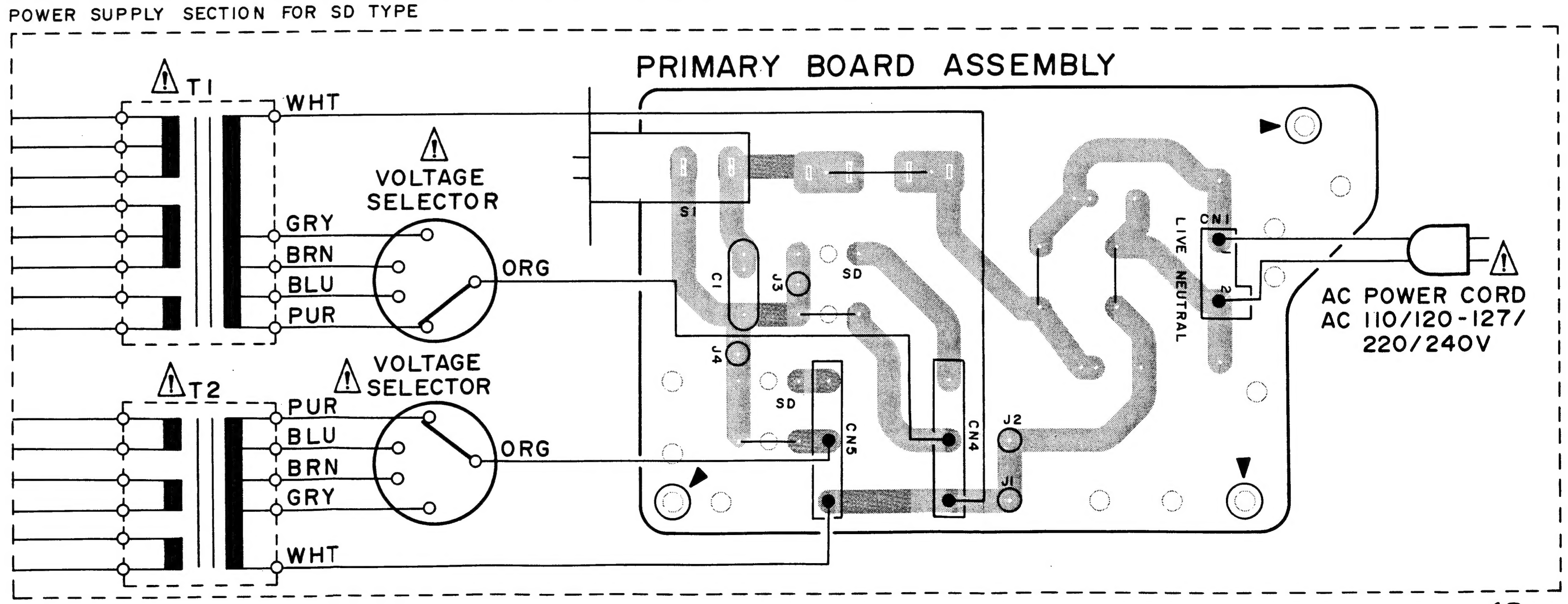
POWER SUPPLY SECTION FOR KU TYPE



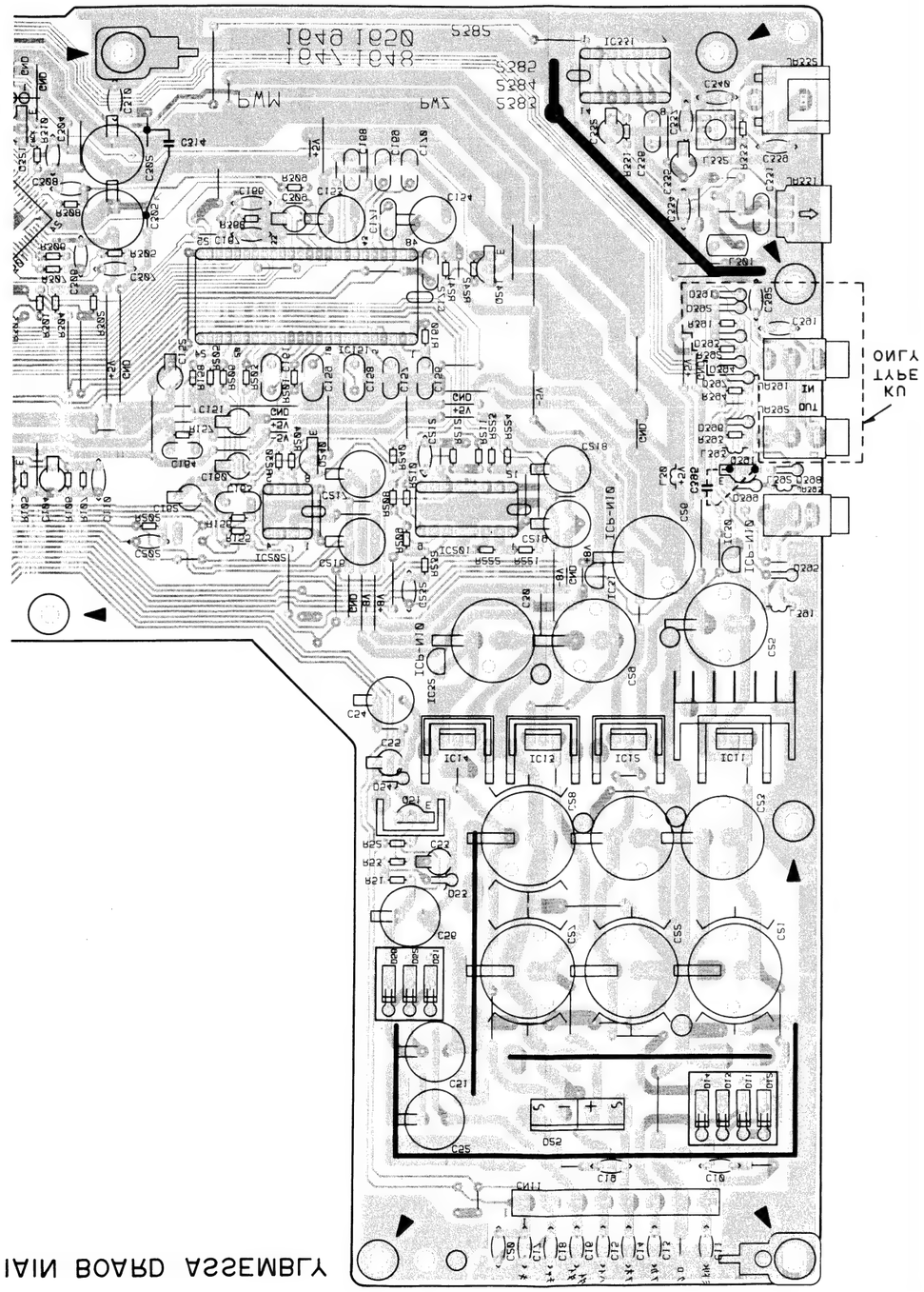
POWER SUPPLY SECTION FOR HB AND HEM TYPES

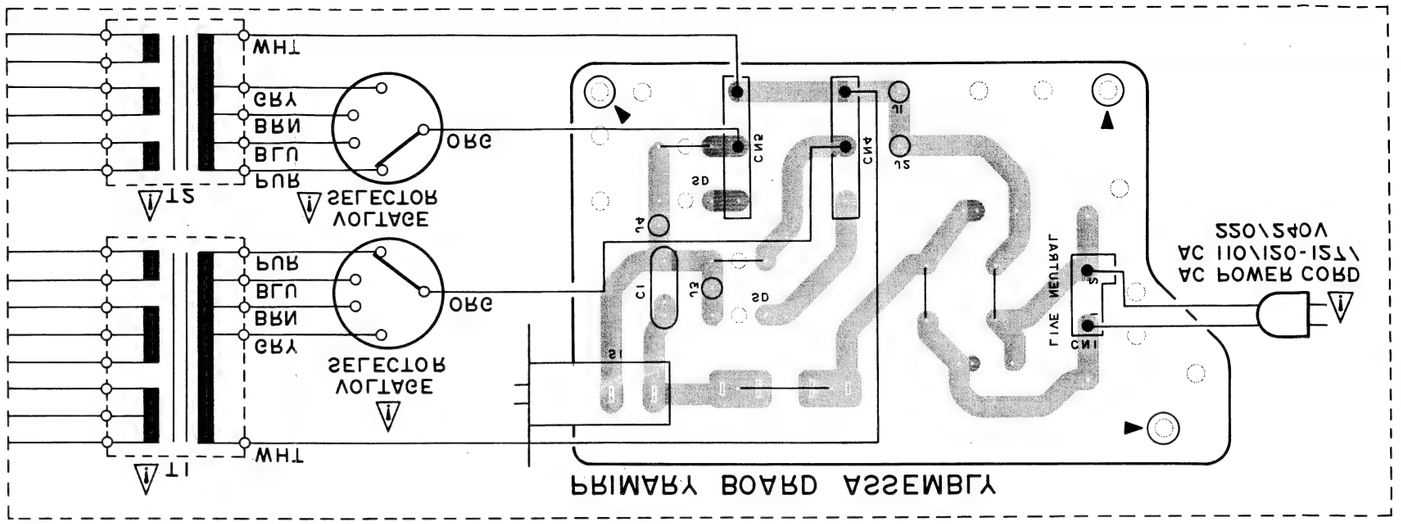


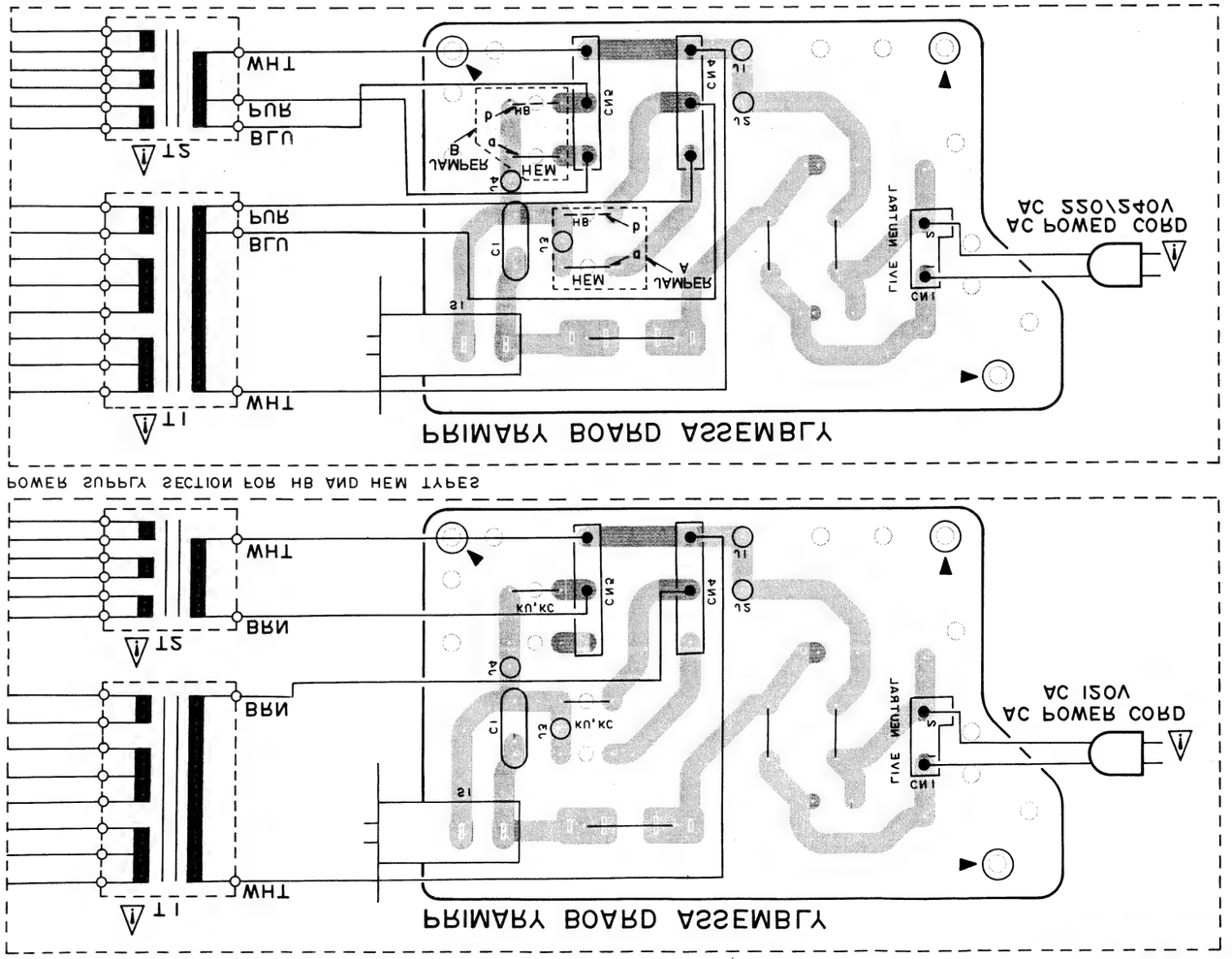
POWER SUPPLY SECTION FOR SD TYPE



A B C D


MAIN BOARD ASSEMBLY
ONLY TYPE KU


POWER SUPPLY SECTION FOR SD TYPE
PRIMARY BOARD ASSEMBLY
AC POWER CORD
AC 110/120-127V
SELECTOR VOLTAGE
ST
T1
THW
BRN
BLU
PUR
GRY
ORG
LIVE NEUTRAL


POWER SUPPLY SECTION FOR HB AND HEM TYPES
PRIMARY BOARD ASSEMBLY
AC POWER CORD
AC 220/240V
HEM
HB
JUMPER
ST
T1
THW
BLU
PUR
LIVE NEUTRAL

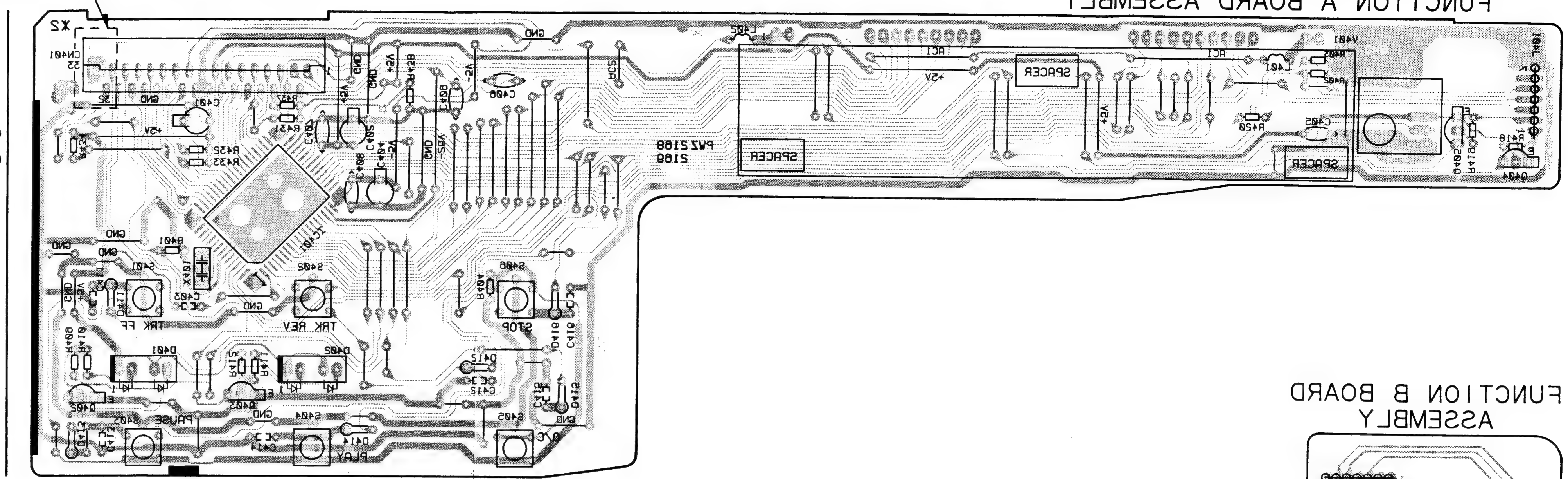
POWER SUPPLY SECTION FOR KU TYPE
PRIMARY BOARD ASSEMBLY
AC POWER CORD
AC 120V
KU-KC
ST
T1
THW
BRN
LIVE NEUTRAL

MAIN BOARD ASSEMB

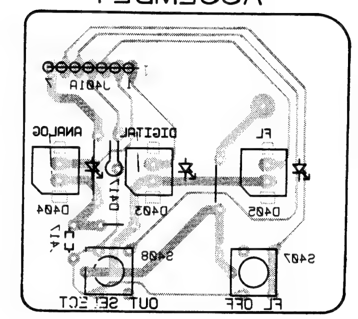
This P.C.B. connection diagram is viewed from the foil side.

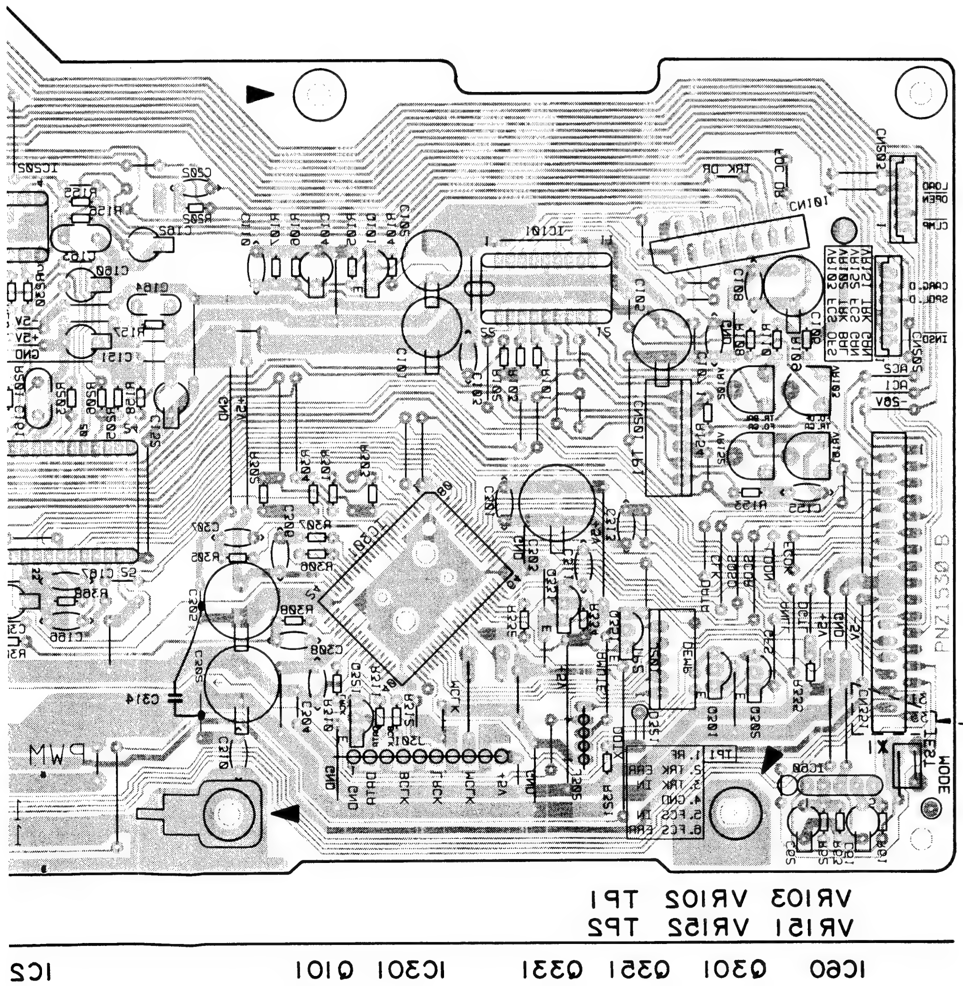
※2	CN401
KU	33pins
HEM,SD,HB	31pins

FUNCTION A BOARD ASSEMBLY



FUNCTION B BOARD ASSEMBLY



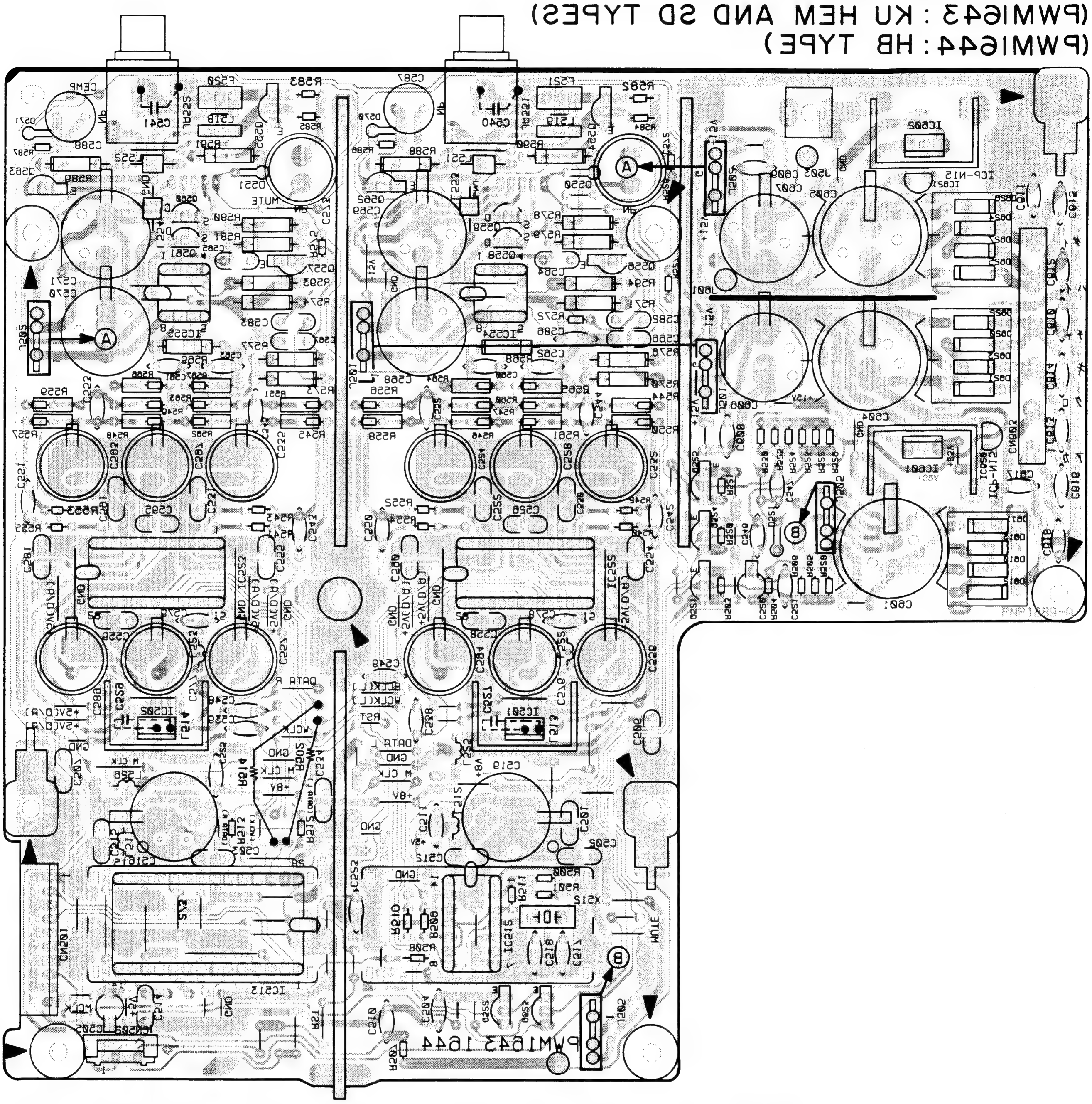


※1	CN351
KU	33pins
HEM,SD,HB	31pins

A
B
C
D

This P.C.B. connection diagram is viewed from the foil side.

ANALOG BOARD ASSEMBLY
(PWM1643 : KU HEM AND SD TYPES)
(PWM1644 : HB TYPE)



IC620 IC602 IC621 IC601

Q525 Q524 Q521

Q554 Q556

IC501 IC522 Q523

Q559 Q558 IC554 Q522 IC512

Q562

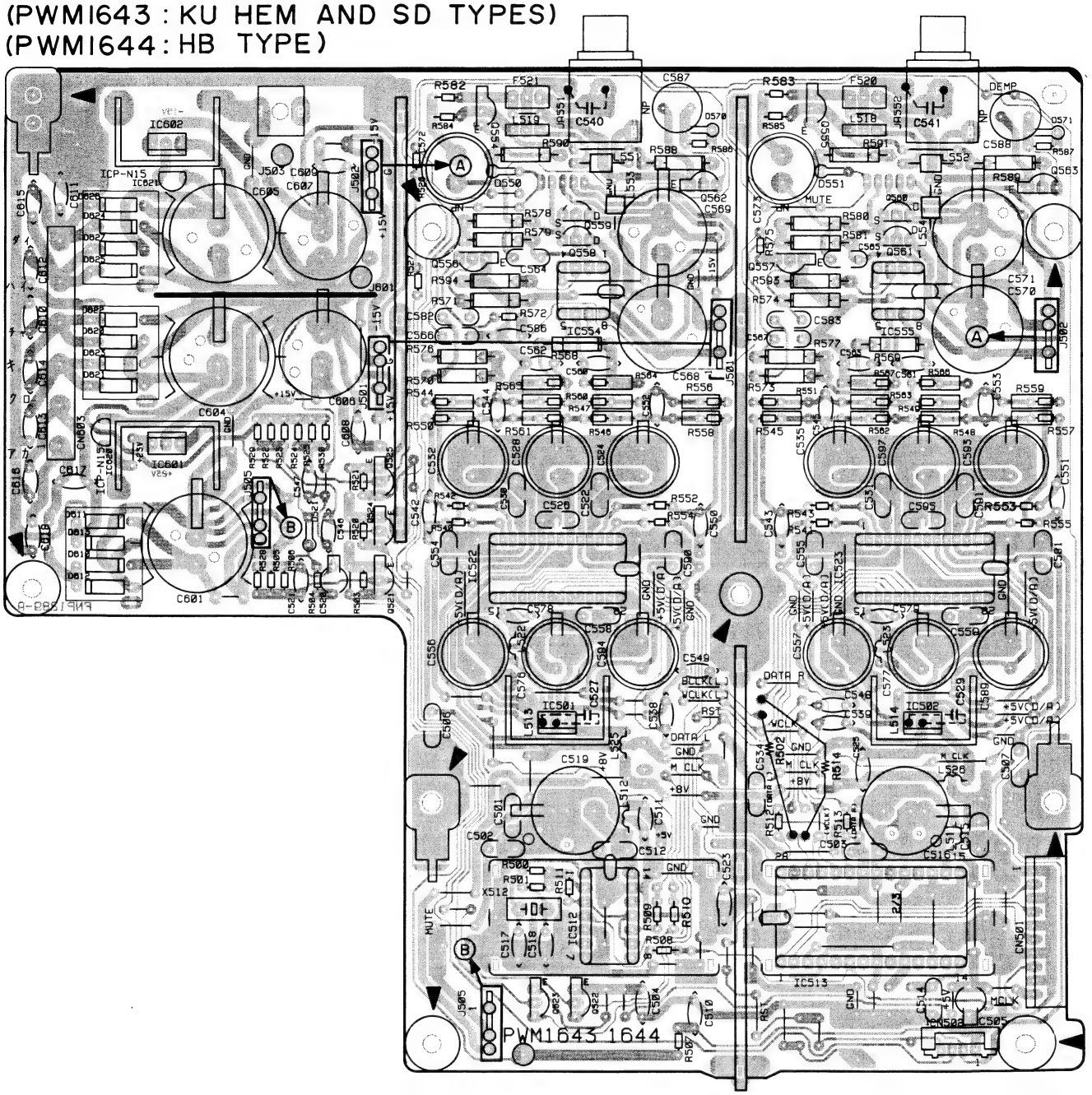
Q555 Q557 IC513

Q560 Q561 IC555

IC502 IC523

Q563

ANALOG BOARD ASSEMBLY
(PWM1643 : KU HEM AND SD TYPES)
(PWM1644 : HB TYPE)



IC620 IC602 IC621 IC601

Q525 Q524 Q521

Q554 Q556

IC501 IC522 Q523

Q559 Q558 IC554 Q522 IC512

Q562

Q555 Q557 IC513

Q560 Q561 IC555

IC502 IC523

Q563

TO MAIN BOARD ASSEMBLY J301

TO MAIN BOARD ASSEMBLY J302

TO POWER TRANSFORMER

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC620, IC621.

L540~547: PTH1010 (FERRITE BEADS)

Q554~557: 2SC3068
Q562, 563: 2SC3068
Q558, 561: 2SK246
Q559, 560: 2SJ103
IC554, 555: NJM5532DD
C572, 573: PCH1072
L551~L554: VTH1013 (FERRITE BEADS)

C503, C504: PCL1029

C523: PCL1029

C578, 579 PCL1029

C608~C618 PCL1029

PWM1643 (KU, SD, HEM) PWM1644 (HB)
ANALOG BOARD ASSEMBLY

PIONEER®
The Art of Entertainment

PION-03524

Service Manual

SERVICE GUIDE
ORDER NO.
ARP2318

COMPACT DISC PLAYER

PD-41

PD-9700 PD-31
PD-8700 PD-8700-S
PD-7700 PD-7700-S

- **For information on performing repair works, refer to the respective service manuals, ARP2297(PD-41, PD-9700) and ARP2228(PD-31, PD-8700, PD-8700-S, PD-7700, PD-7700-S).**

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 9120 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

FI JUL. 1991

Printed by: Schaltungsdienst Lange, Berlin (GERMANY)

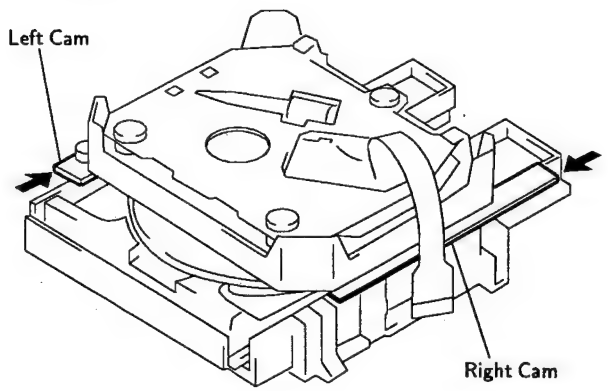
1. DISASSEMBLY

1.1 DISASSEMBING LOADING MECHANISM ASSEMBLY

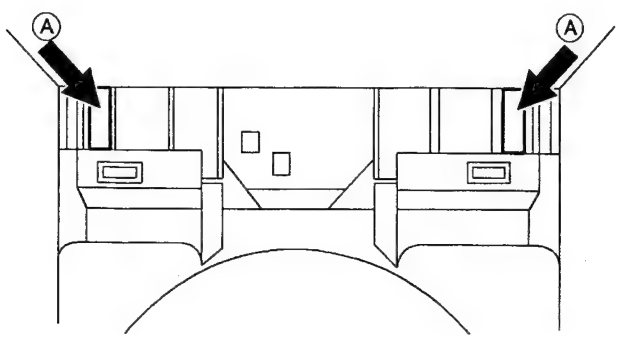
Tray Removal

① Open the tray all the way.

Note : If you slide the right cam and the left cam in the direction of the arrow, you can open the tray by hand.



② While pressing the plastic springs section Ⓐ at the rear of the tray left and right at the same time, pull out the tray.

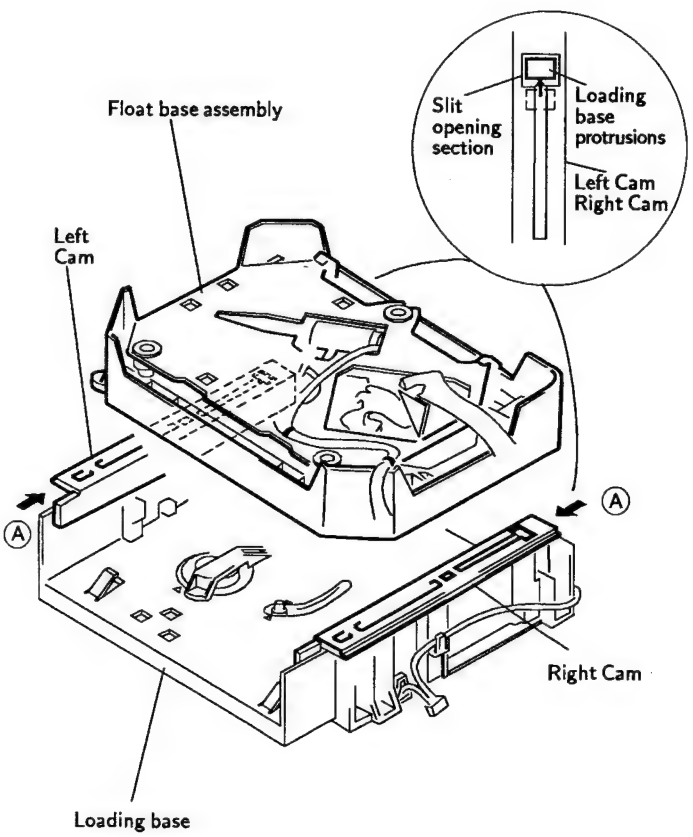


Float Base Assembly Removal

① Remove the tray.

② Move the right and left cams in the direction of their respective Ⓐ arrows until the protrusions of the loading base come to the slit opening of the right cam and the left cam.

③ Pull up the float base assembly and remove it from the loading base.

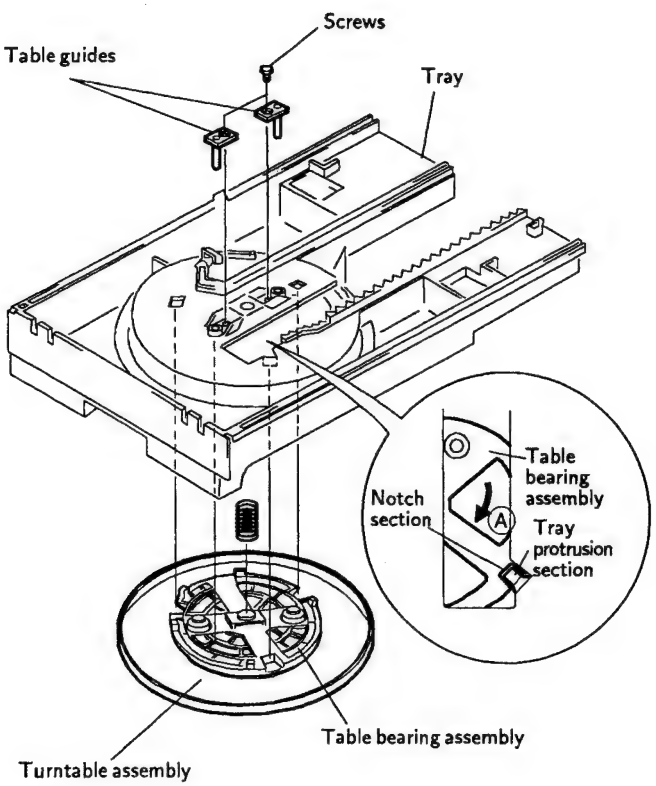


Turntable Assembly Removal

① Remove the two screws from the rear of the tray and remove the two table guides.

② Turn the table bearing assembly in the direction of the Ⓐ arrow.

③ At the position where the tray protrusion is lined up with the table bearing assembly notch (the position shown in the figure), remove the turntable assembly.

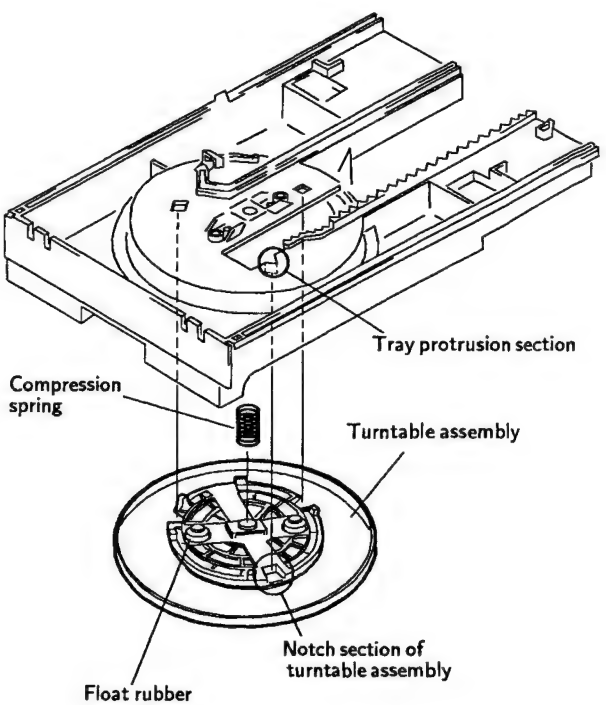


1.2 ASSEMBLING THE LOADING MECHANISM ASSEMBLY

Assembling the Tray Assembly

① Place the turntable assembly upside down and place the compression spring in its center.

② Line up the notch section of the turntable assembly with the protrusion section of the tray and assemble.

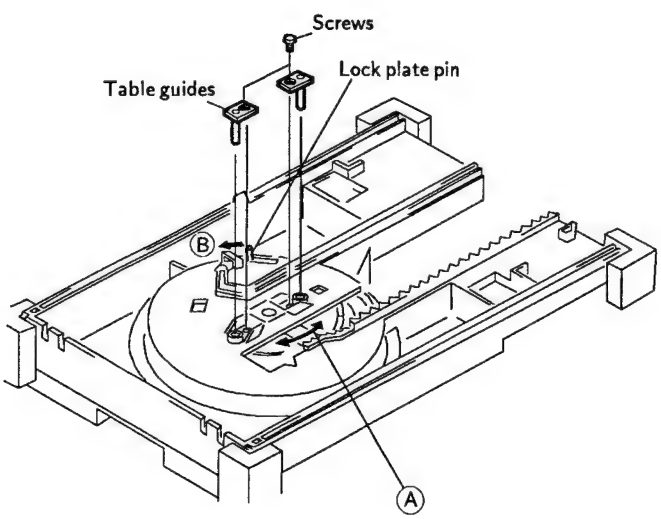


Note : The turntable assembly is to be in the position shown in the figure.

③ After assembling the turntable assembly and the tray, turn the lock plate pin somewhat in the direction of the Ⓑ arrow, then hold with your finger.

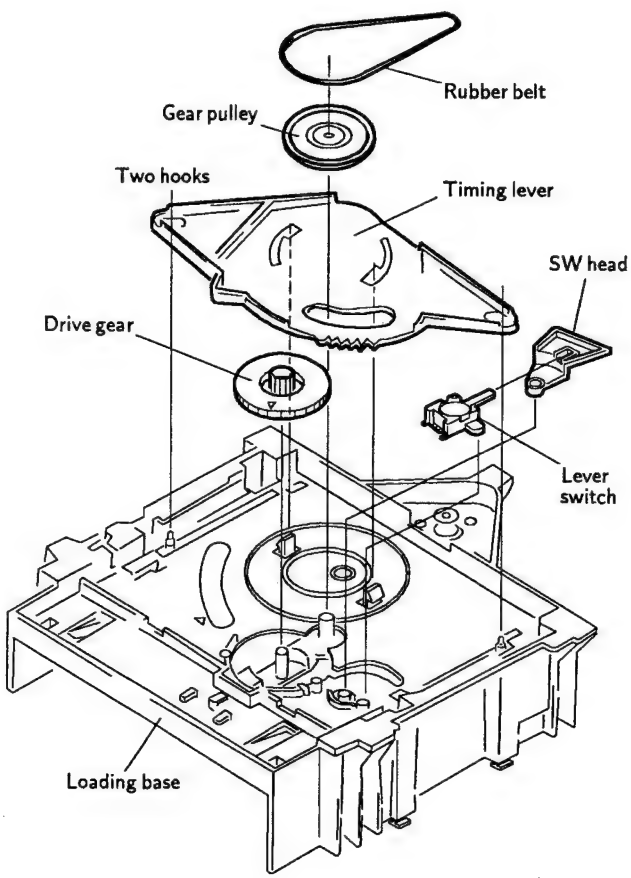
④ While still holding the lock plate pin with your finger, turn the table bearing assembly in the direction of the Ⓐ arrow until the holes in the float rubber piece and in the tray are lined up with each other.

⑤ Use the two screws to install the two table guides into the lines up tray and float rubber piece holes.



Drive Gear, Timing lever, Gear Pulley, Switch Head, and Lever Switch Installation

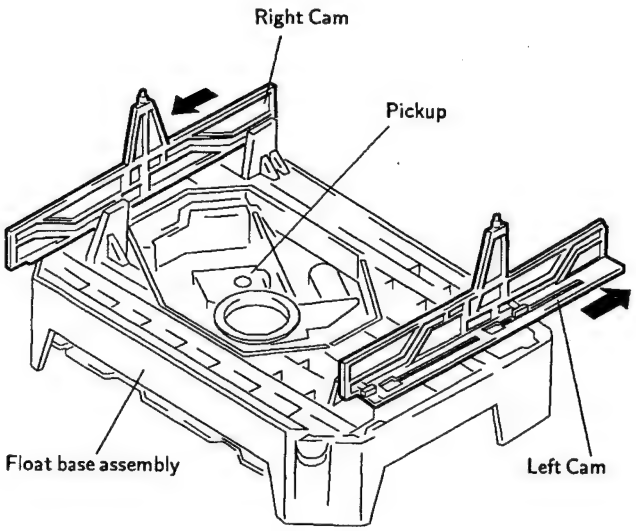
① Install each part on the loading base as shown in the figure.



Loading Base Assembly, Float Base Assembly, Right Cam, and Left Cam Installation

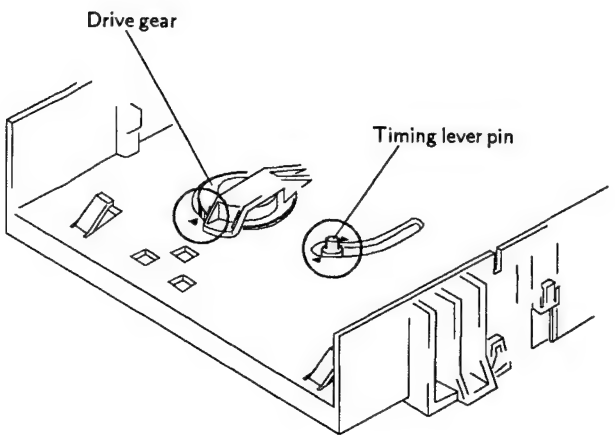
① Place the float base assembly upside down (with the pickup facing up).

② Install the right cam and the left cam on the float base assembly. Position each cam all the way in the direction of its respective arrow.



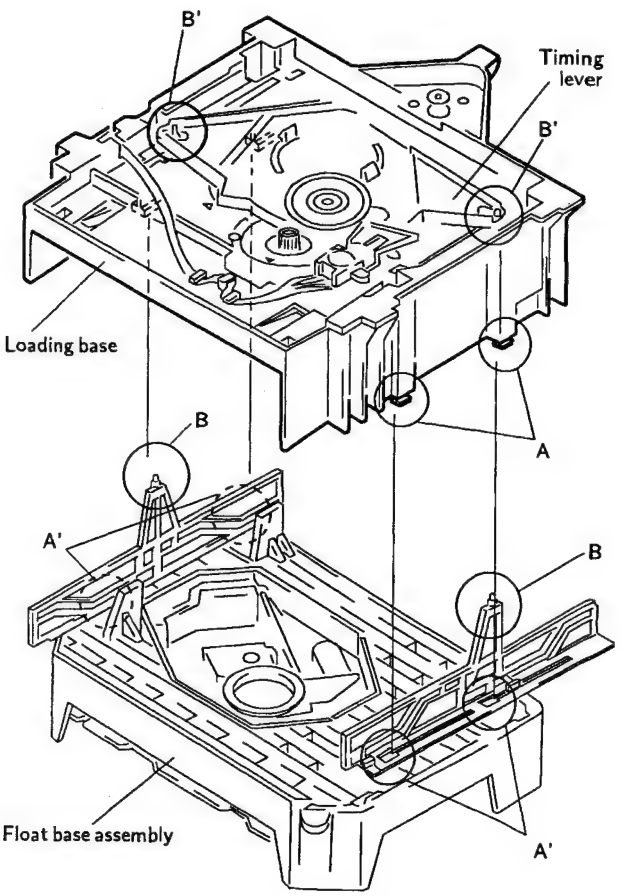
③ Line up the △ marks on the drive gear and the loading base as shown in the figure.

④ Line up the ⧖ marks on the loading base and the timing lever pin as shown in the figure.



⑤ Next, finely adjust the timing lever angle and the left and right cam position and insert the loading base protrusion A sections (two each on the left and right) into the A' openings on the left and right cam.

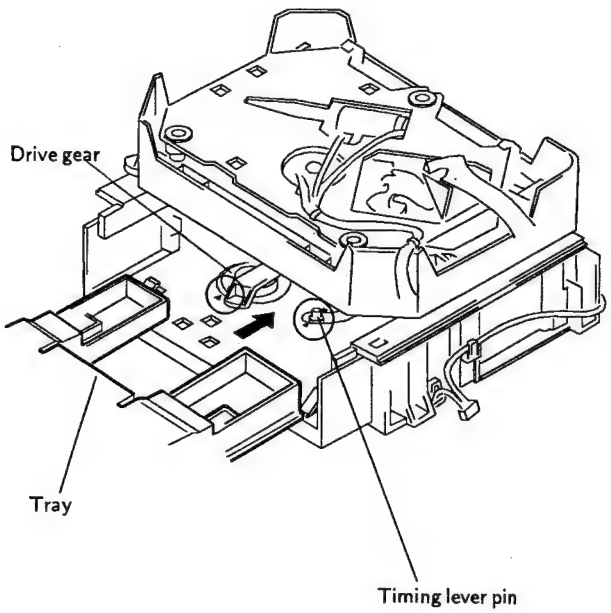
At the same time, pass the protrusion B sections on the left and right cam (one on each cam) through the loading base slit and insert into the B' holes on the timing lever.



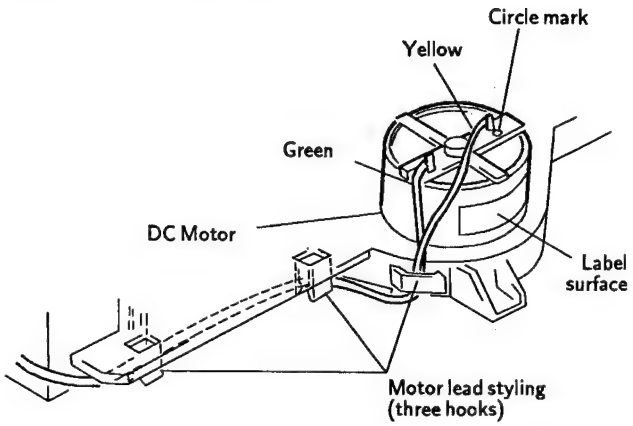
Tray Installation

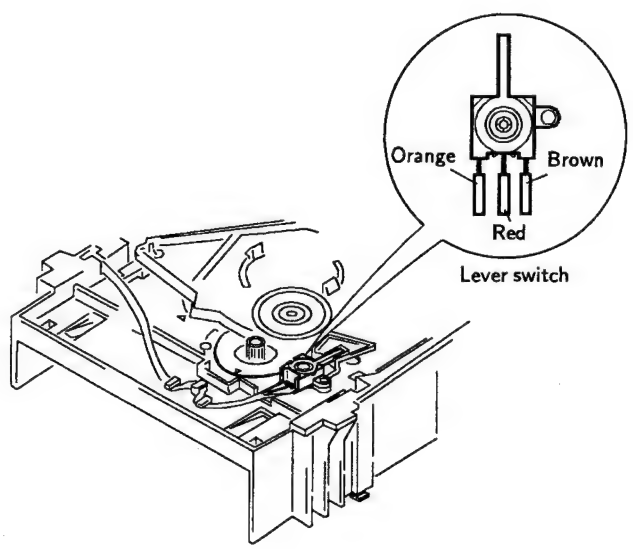
① Place the parts assembled in the last section upside down.

② While being careful not to knock the loading base, drive gear, and timing lever pin aligned in the last section out of place, insert the tray.



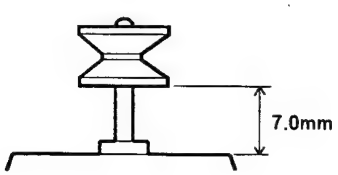
Motor and Switch Wiring and Styling





Assembling the Motor Assembly

Set the gap between the motor and pulley to 7.0 mm.



2. MECHANISM DESCRIPTION

2.1 MECHANISM SUMMARY

Summary

This mechanism is a single mechanism assembly with a turntable mounted.

Mechanism Sections

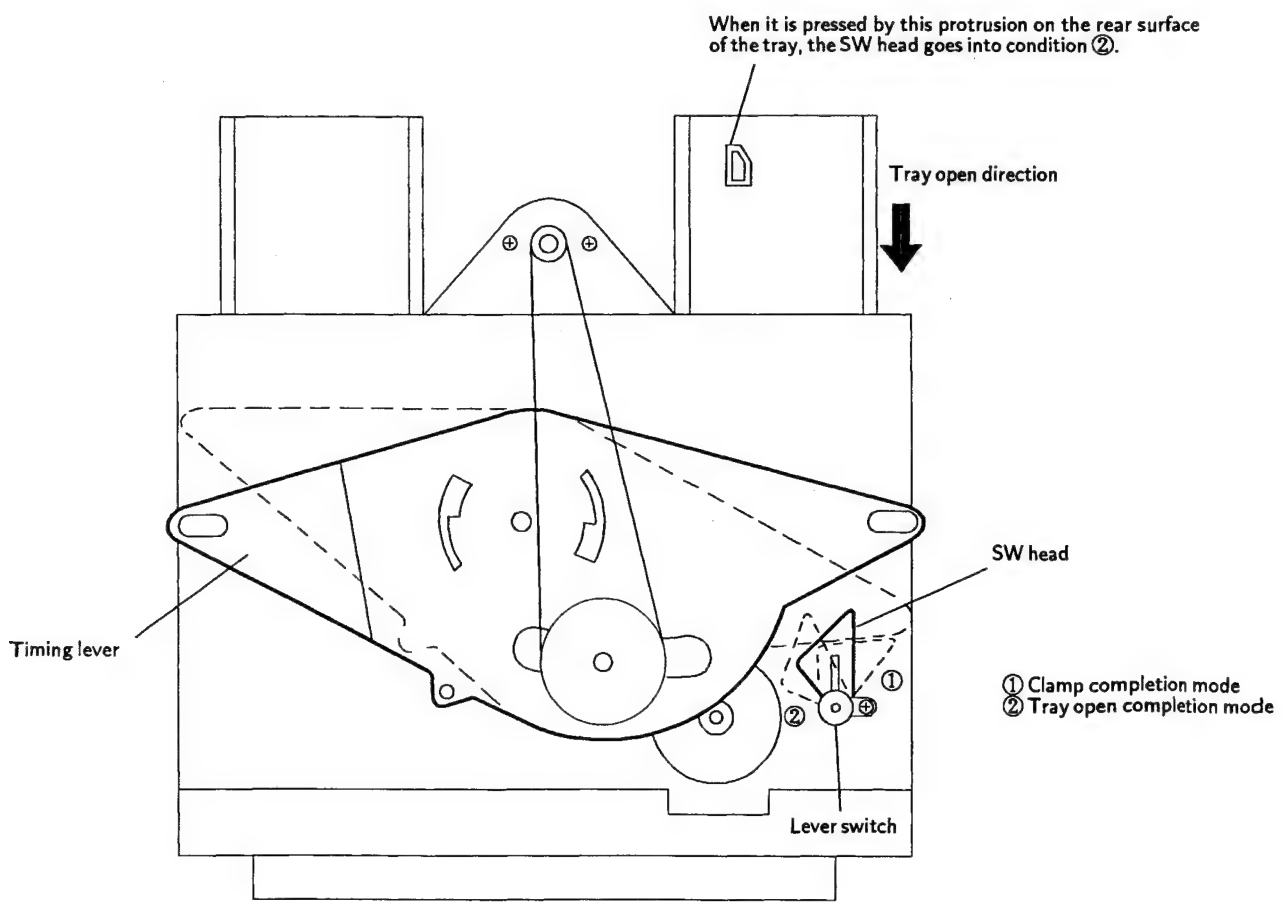
This mechanism comprises the loading section and the servo mechanism section.

Loading Section

The loading section opens and closes the tray and provides the clamping for the servo mechanism up/down movement. As a new test, this mechanism has a mechanism for decelerating smoothly at the completion of tray take-in in order to make the tray movement look smooth. This done by a spiral shaped drive gear (PNW1996) and the irregularly shaped rack on the tray.
The spring-type clamp quiets the clamping.

Servo Mechanism Section

The basic structure of the servo mechanism is about the same as that for a multi-disc type servo mechanism, but the use of the spring-type clamp makes a turntable magnet unnecessary.
The lever switch (DSK1003) and the switch head (PNW1999) are used to detect the completion of tray opening by means of the protrusion on the tray (PNW 2003) rear surface and clamp completion is detected using the timing lever (PNW1997) side wall.
When it is pressed by the protrusion on the rear surface of the tray, the switch head goes into condition ②.

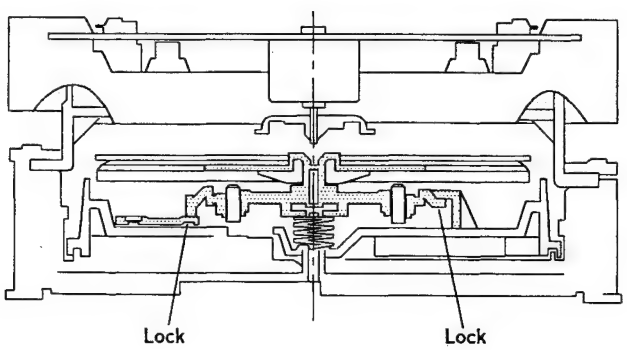


2.2 OPERATION SUMMARY

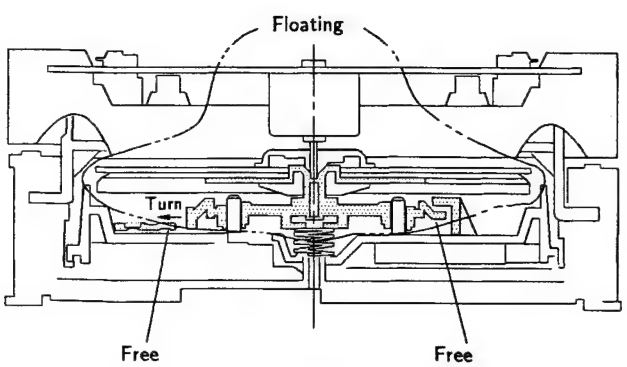
This explanation covers operations sequentially from the disc take-in state to the completion of tray opening.

1. Clamp Condition

This explanation starts from the tray assembly.
The turntable in the tray assembly always turns freely, but the height of the turntable is locked while the tray is open. This lock is released by the clamping.
This is because while the tray is open, the table bearing that receives the turntable is locked by the lock plate. Just before the completion of tray take-in, the lock plate is turned to release the lock.
Next, we will explain the clamping. When the lock on the table bearing is released, the turntable is supported from below by the float spring. During clamping, the amount of deflection of the spring generates an upward load to provide the clamping force.



Unclamp state



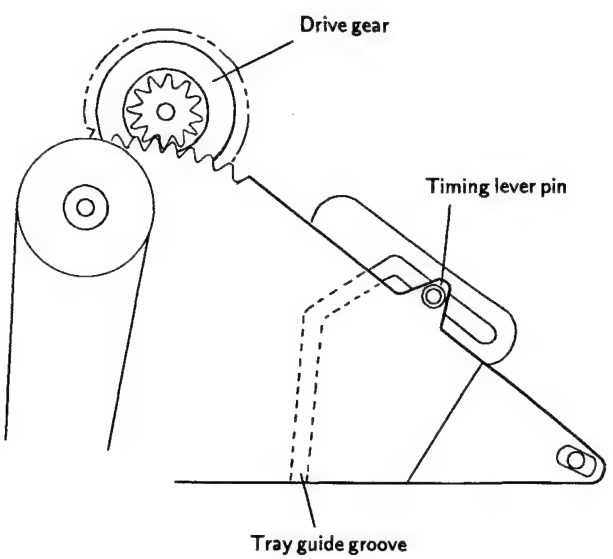
Clamp state

2. Clamp Release

When the timing lever turns, the left and right cams move forward and backward respectively to lift up the float base and release the clamp.

3. Tray Operation

The tray and timing lever have rack sections and these rack sections have notch teeth.
Both mesh with the drive gear, but only one tooth meshes at a time, so normally only one of the rack sections is meshed with the drive gear at a time. The rack section pull-in and separation are synchronized with the timing lever pin and the corresponding tray guide groove. When the servo mechanism separates from the turntable, the tray is pushed out by the timing lever pin and the tray rack meshes with the drive gear. The tray is driven by the drive gear and moves forward while turning the timing lever and releasing the meshing with the drive gear.
The tray deceleration mechanism mentioned earlier causes the tray to accelerate gradually when it starts to open and causes the tray to decelerate smoothly to the completion of take-in when it closes.



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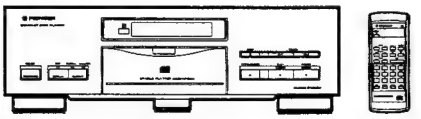
The Art of Entertainment

Service Manual



ORDER NO.
ARP2297

COMPACT DISC PLAYER

PD-41
PD-9700

PD-41 AND PD-9700 HAVE THE FOLLOWING :

Type	Model		Power Requirement	Remarks
	PD-41	PD-9700		
KU	○	–	AC 120 V only	
KC	–	○	AC 120 V only	
HEM	–	○	AC 220 V-230 V, AC 230 V-240 V(switchable)*	
HB	–	○	AC 220 V-230 V, AC 230 V-240 V(switchable)*	
SD	–	○	AC 110 V, 120 V-127 V, 220 V, 240 V(switchable)	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to PD-41/KU, PD-9700/KC, HEM, HB and SD types.**
- **As to the PD-9700/KC, HEM, HB and SD types, refer to page 84.**
- **As to the disassembly and mechanism descriptions, refer to the PD-41, PD-9700 service guide(ARP2318).**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 9120 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

FI JUNE 1991 Printed in Japan

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

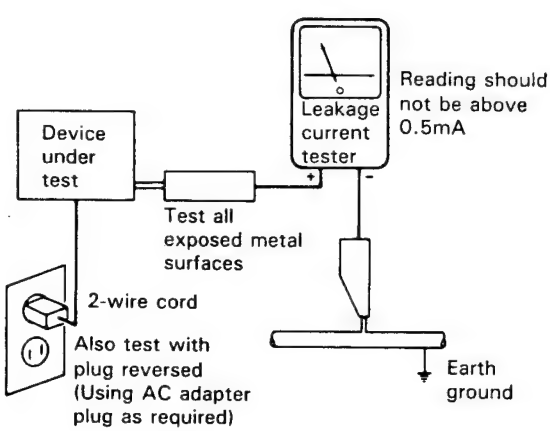
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

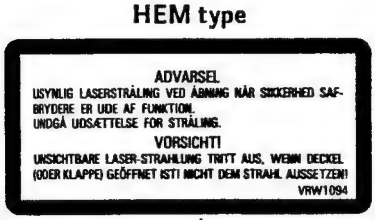
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

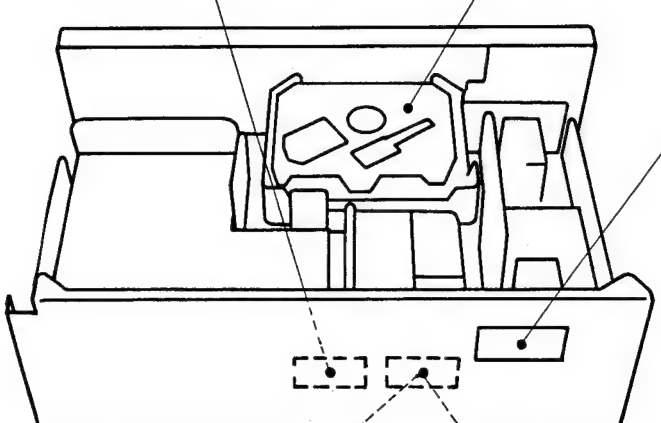
LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK

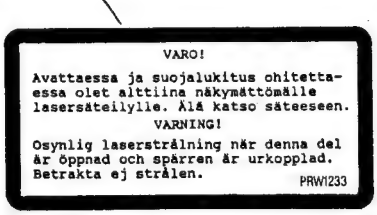
HEM type



HEM and HB types



HB type



HEM type

Additional Laser Caution

1. Laser Interlock Mechanism
   The position of the switch (S 601) for the detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the switch (S 601) is not in CLMP terminal side (when the mechanism is not clamped and CLMP signal is high level).
   Thus, the interlock will no longer function if the switch (S 601) is deliberately set to CLMP terminal side (if CLMP signal is low level).
   In the test mode, the interlock mechanism will not function (refer to page 36).
   Laser diode oscillation will continue if pins 2 and 3 of CXA 1471 S (IC 101) are connected to ground or pin 20 is connected to high level(ON) or the terminals of Q 101 are shorted to each other(fault condition).

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

2. EXPLODED VIEWS AND PARTS LIST

NOTES :

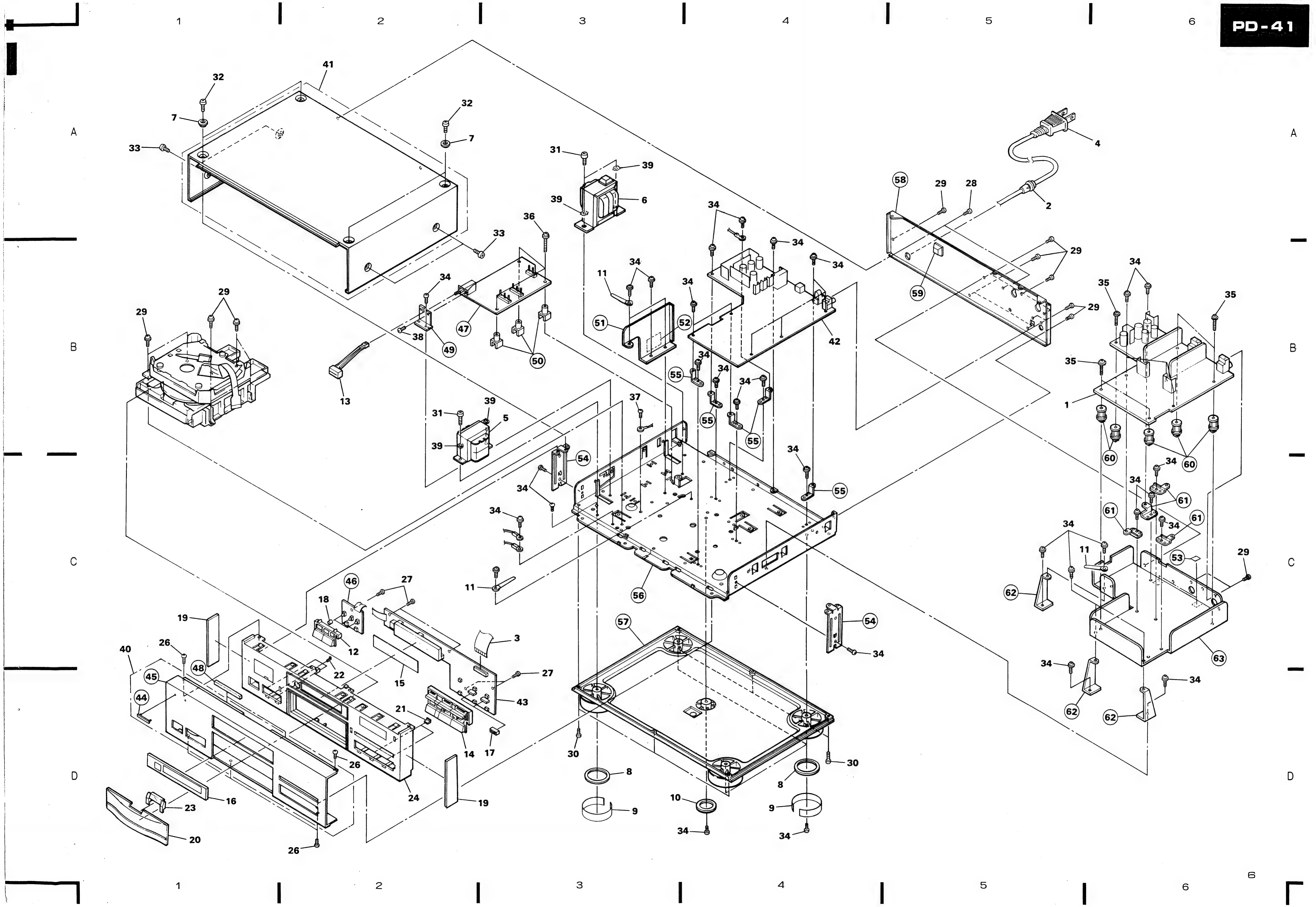
- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

2.1 EXTERIOR

Parts List of Exterior

Mark	No.	Description	Parts No.
⚠◉	1	Analog board assembly	PWM1490
⚠	2	Strain rerief	CM-22C
	3	33P F.F.C/30V	PDD1094
⚠	4	AC power cord	PDG1015
⚠	5	Power transformer	PTT1166
⚠	6	Power transformer	PTT1206
	7	Washer	ABE1009
	8	Stopper	PNM1095
	9	Tape	PNM1099
	10	Stopper	PNM1107
	11	Cord clamper(steel)	RNH-184
	12	Button	PAC1530
	13	Power button	PAC1539
	14	Control button	PAC1609
	15	FL sheet	PAM1514
	16	Display window	PAM1515
	17	LED cover	PEB1150
	18	LED cover (S)	PEB1167
	19	Side rubber	PEB1180
	20	Tray panel	PNW1815
	21	Lens L	PNW1860
	22	Indicator lens	PNW1893
	23	Tray lens	PNW1950
	24	Control panel	PNW2066
	25	· · · · ·	
	26	Screw	BBT30P080FCC
	27	Screw	BBZ26P080FCC
	28	Screw	BBZ30P080FCC
	29	Screw	BBZ30P080FCC
	30	Screw	BBZ30P140FCC
	31	Screw	BBZ40P060FCC
	32	Screw	BBZ40P080FZK
	33	Screw	FBT40P080FZK
	34	Screw	IBZ30P060FCC
	35	Screw	IBZ30P150FCC
	36	Screw	IBZ30P180FCC
	37	Screw	PDZ30P050FCC
	38	Screw	PMZ30P060FCC
	39	Washer	WH40FUC
	40	Front panel assembly	PEA1167

Mark	No.	Description	Parts No.
	41	Bonnet case	PYY1071
⚠◉	42	Main board assembly	PWZ2150
◉	43	Function A board assembly	PWZ2168
	44	Badge	
	45	Front panel	
	46	Function B board assembly	
	47	Primary board assembly	
	48	Rubber sheet	
	49	Switch angle	
	50	Spacer	
	51	L angle	
	52	Sheet	
	53	Tape	
	54	Side angle	
	55	PCB angle	
	56	Under base	
	57	Base	
	58	Rear base	
	59	Binder holder	
	60	PCB spacer	
	61	Angle B	
	62	Shield angle	
	63	Shield plate	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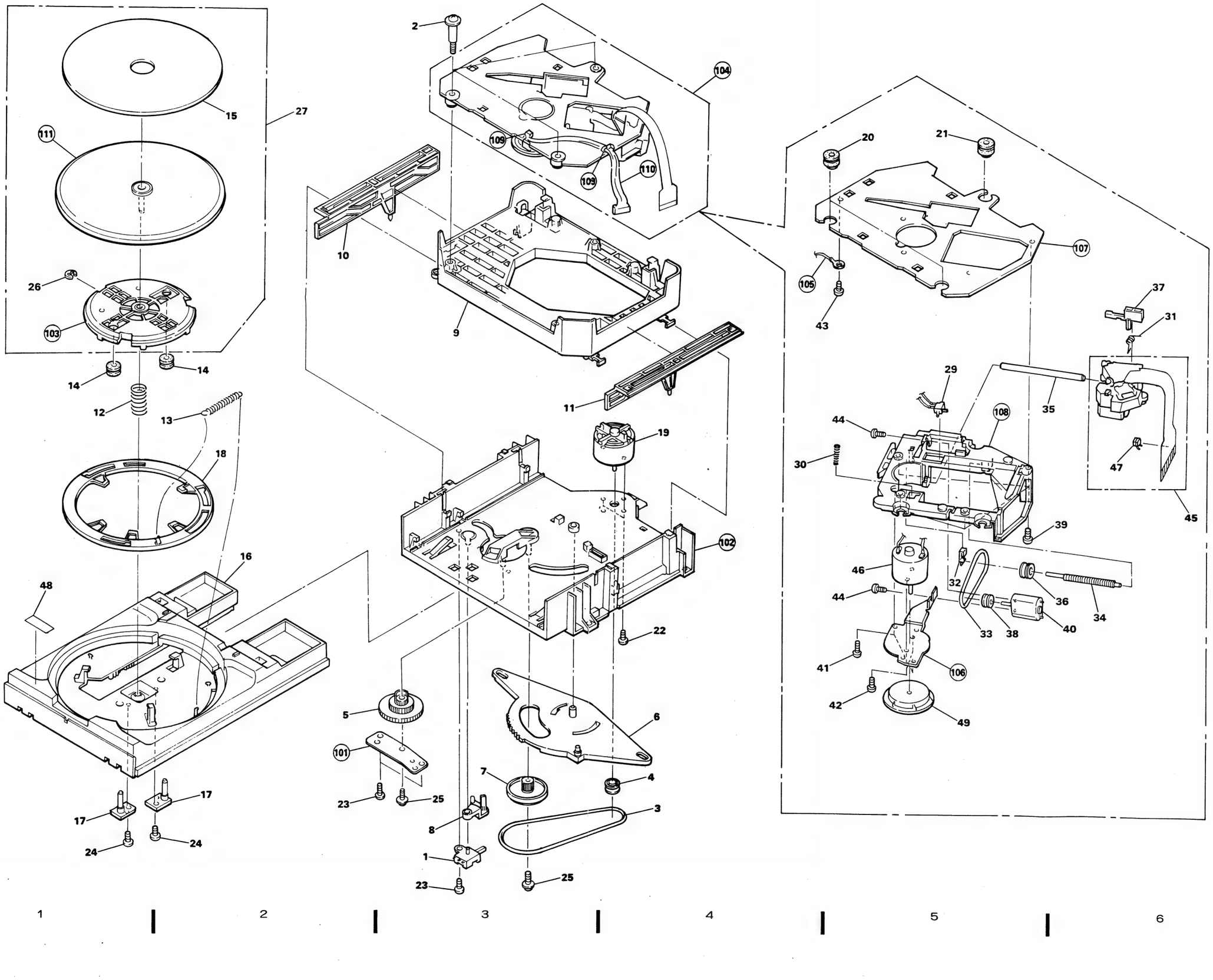
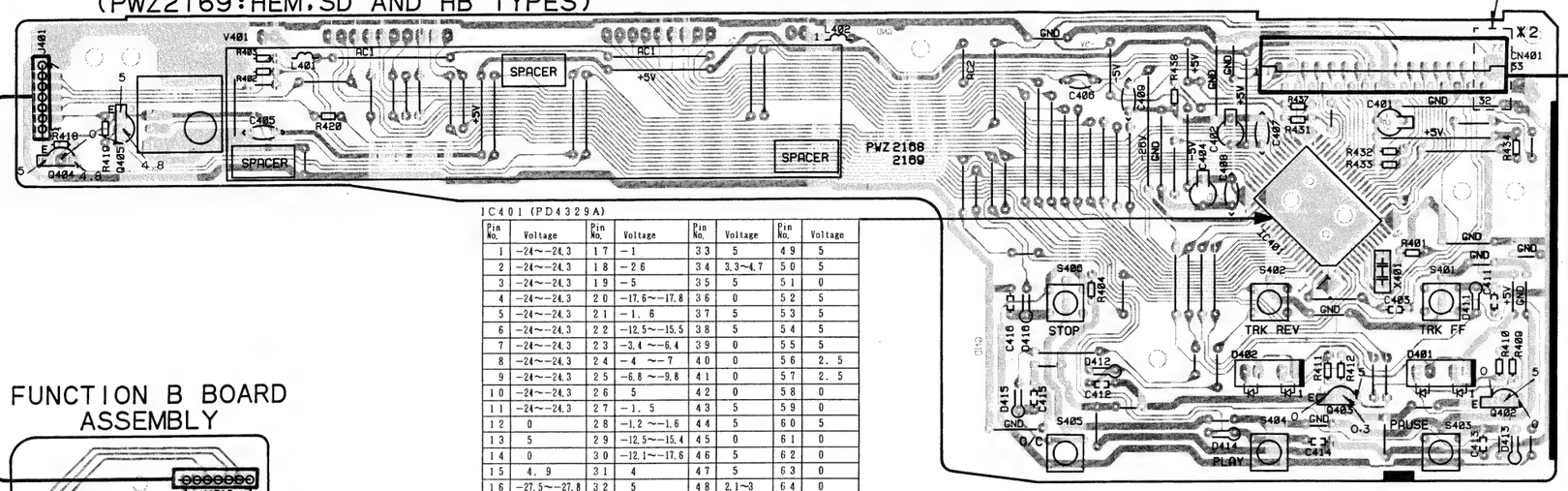
2.2 MECHANISM SECTION



FUNCTION A BOARD ASSEMBLY
(PWZ2168:KU AND KC TYPES)
(PWZ2169:HEM,SD AND HB TYPES)



※2

	CN401
KU,KC	33pins
HB,HEM,SD	31pins

IC401 (PD4329A)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	−24～−24.3	17	−1	33	5	49	5
2	−24～−24.3	18	−2.6	34	3.3～4.7	50	5
3	−24～−24.3	19	−5	35	5	51	0
4	−24～−24.3	20	−17.6～−17.8	36	0	52	5
5	−24～−24.3	21	−1.6	37	5	53	5
6	−24～−24.3	22	−12.5～−15.5	38	5	54	5
7	−24～−24.3	23	−3.4 ～−6.4	39	0	55	5
8	−24～−24.3	24	−4 ～−7	40	0	56	2.5
9	−24～−24.3	25	−6.8 ～−9.8	41	0	57	2.5
10	−24～−24.3	26	5	42	0	58	0
11	−24～−24.3	27	−1.5	43	5	59	0
12	0	28	−1.2 ～−1.6	44	5	60	5
13	5	29	−12.5～−15.4	45	0	61	0
14	0	30	−12.1～−17.6	46	5	62	0
15	4.9	31	4	47	5	63	0
16	−27.5～−27.8	32	5	48	2.1～3	64	0

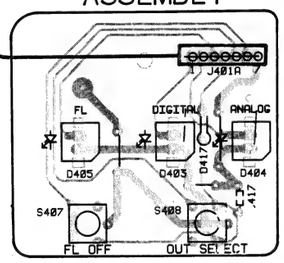
IC301 (CXD2500AQ)

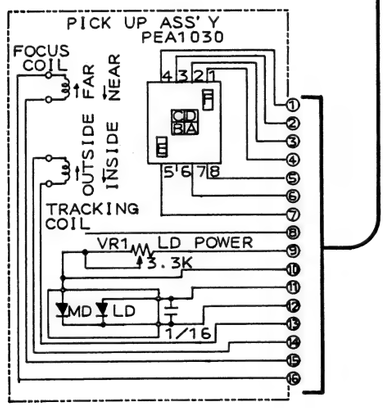
Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0～0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1.0	53	2.5
14	0.9～1.3	54	2.5
15	0	55	0
16	2.0	56	2.9
17	0	57	2.5
18	2.5	58	5
19	2.4	59	5
20	2.4	60	2.5
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3～4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1～3
30	0	70	5
31	1.3～2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

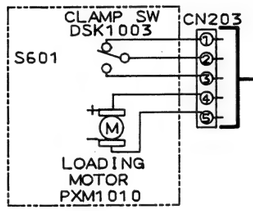
IC151 (CXA1372S)

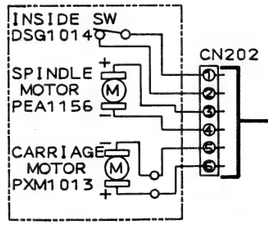
Pin No.	Voltage	Pin No.	Voltage
1	0	25	−5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	−5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	−1.5
17	0	41	−1.7
18	0	42	5
19	0	43	−0.7
20	0.2～0.8	44	−1.6
21	0	45	0
22	−4	46	0.8
23	1.3	47	−5
24	0	48	0

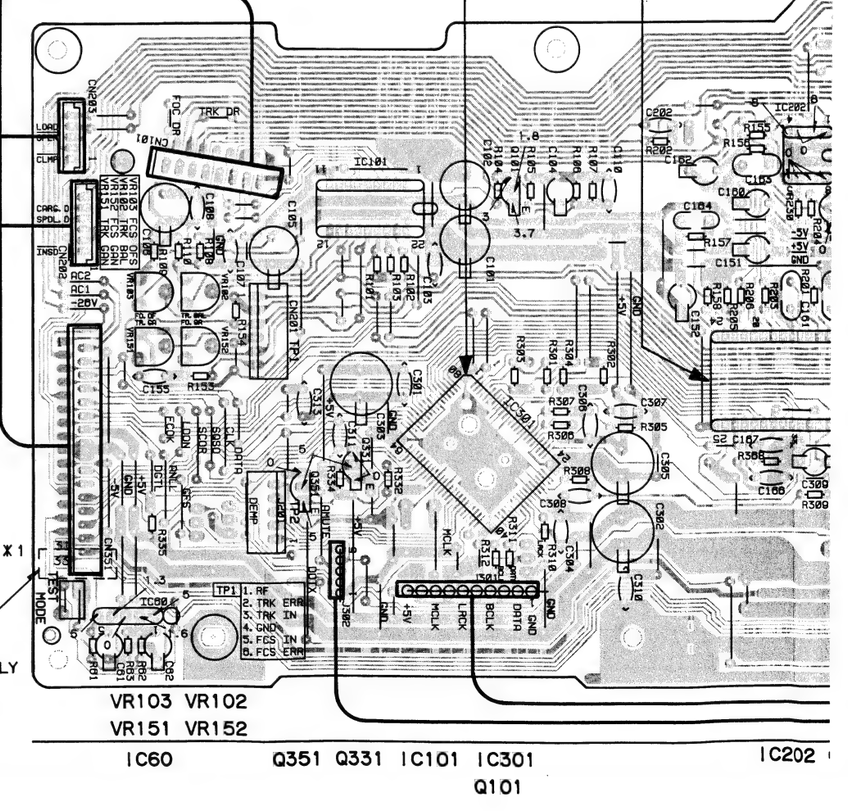
FUNCTION B BOARD ASSEMBLY











※1

	CN351
KU,KC	33pins
HB,HEM,SD	31pins

Line Voltage Selection (For HEM and HB types)

Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire A as follows

Voltage	Jumper wire A position
220 V-230 V	a
230 V-240 V	b

4. Stick the line voltage label on the rear panel.

Parts No.	Description
AXX-193	220 V label
AXX-192	240 V label

IC401 (PD4329A)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	5	17	−1	33	5	49	5
2	−24～−24.3	18	−26	34	3.3～4.7	50	5
3	−24～−24.3	19	−5	35	5	51	0
4	−24～−24.3	20	−17.6～−17.8	36	0	52	5
5	−24～−24.3	21	−1.6	37	5	53	5
6	−24～−24.3	22	−12.5～−15.5	38	5	54	5
7	−24～−24.3	23	−3.4～−6.4	39	0	55	5
8	−24～−24.3	24	−4～−7	40	0	56	2.5
9	−24～−24.3	25	−6.8～−9.8	41	0	57	2.5
10	−24～−24.3	26	5	42	0	58	0
11	−24～−24.3	27	−1.5	43	5	59	0
12	0	28	−1.2～−1.6	44	5	60	5
13	5	29	−12.5～−15.4	45	0	61	0
14	0	30	−12.1～−17.6	46	5	62	0
15	4.9	31	4	47	5	63	0
16	−27.5～−27.8	32	5	48	2.1～3	64	0

Parts List of Mechanism section

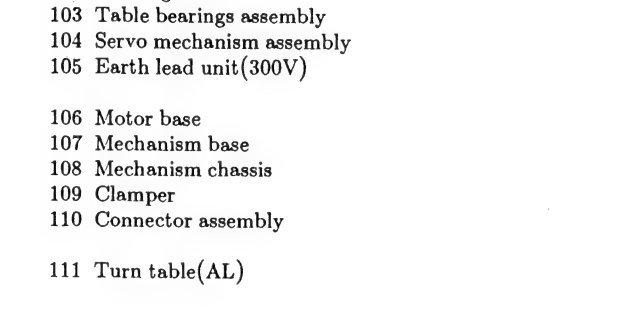
Mark	No.	Description	Parts No.
	1	Lever switch	DSK1003
	2	Screw(steel)	PBA1027
	3	Rubber belt	PEB1186
	4	Motor pulley	PNW1634
	5	Drive gear	PNW1996
	6	Timing lever	PNW1997
	7	Gear pulley	PNW1998
	8	SW head	PNW1999
	9	Float base	PNW2000
	10	Left cam	PNW2001
	11	Right cam	PNW2002
	12	Compression spring	PBH1120
	13	Tention spring	PBH1121
	14	Float(rubber)	PEB1014
	15	Table rubber sheet	PEB1169
	16	Tray	PNW2003
	17	Table guide	PNW2004
	18	Lock plate	PNW2005
	19	DC motor(0.75W)	PXM1010
	20	Rubber bush	PEB1031
	21	Rubber bush	PEB1170
	22	Screw	BMZ26P040FMC
	23	Screw	BPZ26P060FMC
	24	Screw	BPZ26P060FMC
	25	Screw	IPZ20P080FMC
	26	Stop ring	YE20S
	27	Turn table assembly	PEA1157
	29	Push switch	DSG1014
	30	Spring	PBH1009
	31	Speing	PBH1084
	32	Plate spring	PBK1057
	33	Belt(square)	PEB1072
	34	Screw	PLA1003
	35	Guide bar	PLA1071
	36	Pulley	PNW1066
	37	Half nut	PNW1605
	38	Motor pulley	PNW1634
	39	Screw	PBZ30P080FMC
	40	DC motor(1.7W)	PXM1013
	41	Screw	BPZ20P080FZK
	42	Screw	JFZ20P025FMC
	43	Screw	PBZ30P060FMC
	44	Screw	PMZ20P030FMC
	45	Pick up assembly	PEA1030
	46	DC motor assembly(With oil)	PEA1156
	47	Semi-fixed VR(3.3K)	PCP1008
	48	Caution label	PRW1244
	49	Disc table	PNW1067

Mark	No.	Description	Parts No.
	101	Shaft holder	
	102	Loading base	
	103	Table bearings assembly	
	104	Servo mechanism assembly	
	105	Earth lead unit(300V)	
	106	Motor base	
	107	Mechanism base	
	108	Mechanism chassis	
	109	Clamper	
	110	Connector assembly	
	111	Turn table(AL)	

• How to install the disc table

1 Use nippers or other tool to cut the two sections marked Ⓐ in figure 1. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



2.3 REMOVE THE TRAY PANEL AND THE TRAY LENS

Hold the tray panel with your hands as the figure s
right, and grasp the tray with your thumbs and then l
tray panel up while pulling it toward you with the
fingers.(Figs . 1 and 2)

2.4 INSTALL THE TRAY PANEL AND THE TRAY LENS

Align the tray panel with the grooves located at both
of the tray while holding the tray lens with you fingers
then press it down till it stops. (Fig. 3)

Hold the tray panel and the tray as shown in Fig. 4
slide them down till you hear a click sound while pre
strongly with your thumbs. (Figs. 4 and 5)

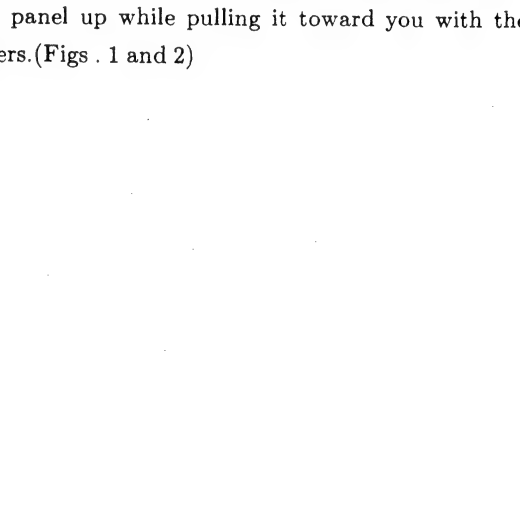


Fig. 4

•TERMINAL VOLTAGES

IC101 (CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	0	12	0
2	2.9	13	−0.9
3	−4.7	14	−0.7
4	0	15	0
5	0	16	0
6	−5	17	0
7	0	18	0.8
8	0	19	0
9	0	20	5
10	0	21	5
11	0	22	0

IC151 (CXA1372S)

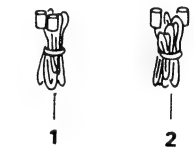
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	17	0	33	5
2	0	18	0	34	0
3	0	19	0	35	0
4	0	20	0.2～0.8	36	−5
5	0	21	0	37	2.5
6	0	22	−4	38	2.5
7	0	23	1.3	39	5
8	0	24	0	40	−1.5
9	0	25	−5	41	−1.7
10	0	26	5	42	5
11	1	27	5	43	−0.7
12	0	28	5	44	−1.6
13	0.2	29	5	45	0
14	0	30	5	46	0.8
15	0	31	5	47	−5
16	5	32	0	48	0

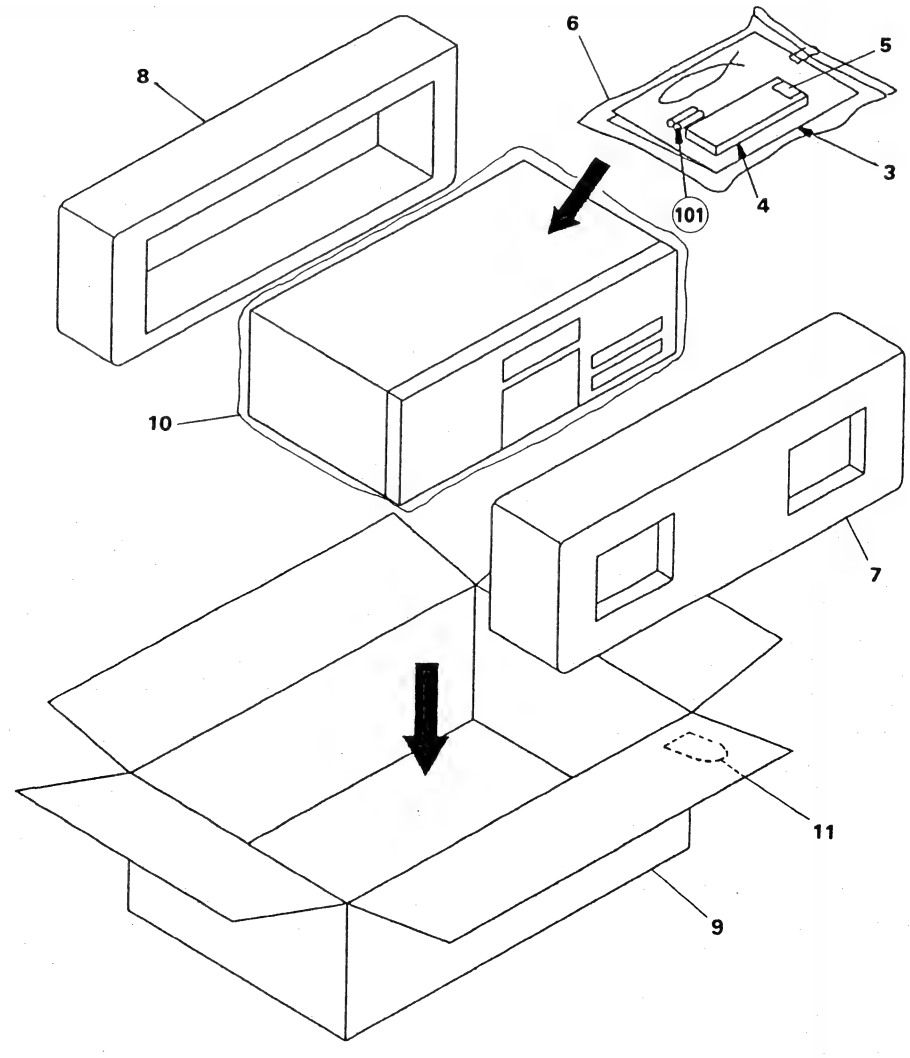
IC301 (CXD2500AQ)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	5	21	0	41	2.5	61	0
2	2.1	22	2.5	42	5	62	2.5
3	5	23	5	43	2.5	63	0
4	2.6	24	2.5	44	0	64	0
5	2.2	25	0.2	45	5	65	0
6	5	26	0	46	4.4	66	3.3～4.6
7	0	27	2.5	47	0	67	5
8	5	28	0	48	0	68	0
9	0	29	0	49	0～0.3	69	2.1～3
10	0	30	0	50	1.2	70	5
11	2.1	31	1.3～2.2	51	1.2	71	5
12	0	32	2.5	52	0	72	5
13	1.0	33	5	53	2.5	73	5
14	0.9～1.3	34	2.5	54	2.5	74	5
15	0	35	2.5	55	0	75	5
16	2.0	36	2.5	56	2.9	76	0
17	0	37	2.5	57	2.5	77	5
18	2.5	38	2.5	58	5	78	5
19	2.4	39	0	59	5	79	5
20	2.4	40	5	60	2.5	80	0

3. PACKING

Mark	No.	Description	Parts No.
	1	Cord with plug(mini plug)	PDE-319
	2	Cord with plug	PDE1001
	3	Operating instructions (English, French)	PRE1149
	4	Remote control unit(CU-PD054)	PWW1058
	5	Battery cover	PZN1001
	6	Polyethelene bag	Z21-038
	7	Protector F	PHA1145
	8	Protector R	PHA1146
	9	CD packing case	PHG1677
	10	Sheet	VHL-037
	11	Label	PRW1253
	101	Battery (R03, AAA)	





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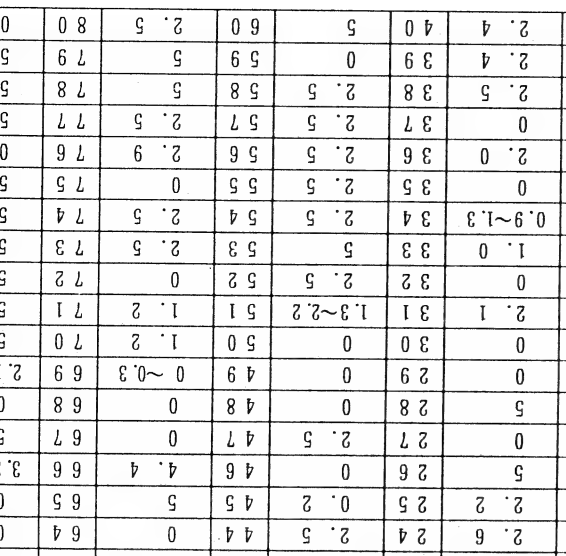


Fig. 1

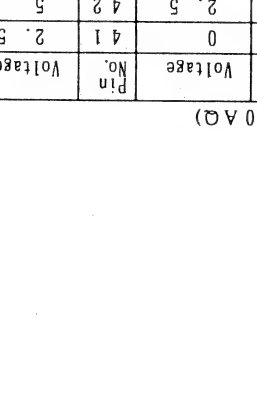


Fig. 2

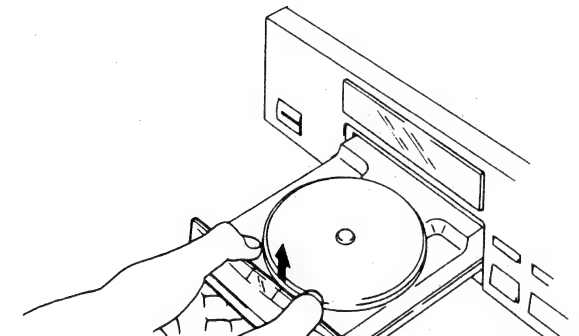


Fig. 3

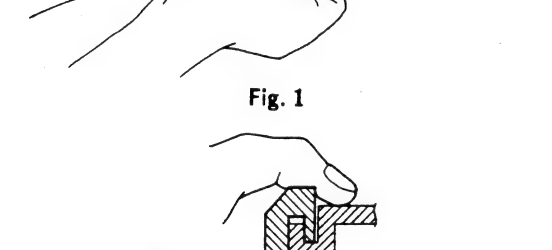
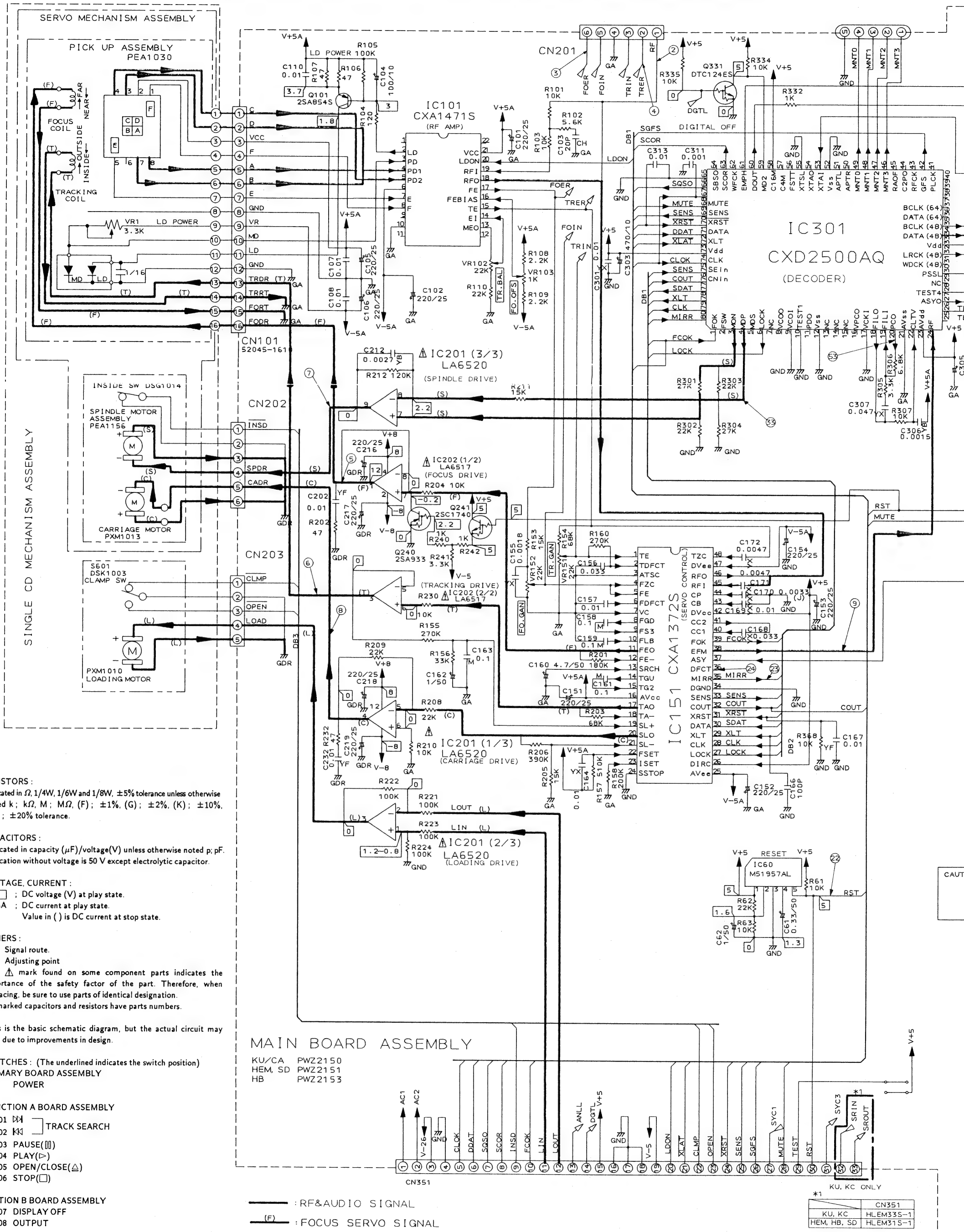


Fig. 5

4. SCHEMATIC DIAGRAM AND P.C.BOARDS CONNECTION DIAGRAM

4.1 MAIN BOARD(PWZ 2150), PRIMARY BOARD, FUNCTION A BOARD(PWZ 2168), AND FUNCTION B BOARD ASSEMBLIES



1.RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2.CAPACITORS :
Indicated in capacity (μF)/voltage(V) unless otherwise noted p; pF.
Indication without voltage is 50 V except electrolytic capacitor.

3.VOLTAGE, CURRENT :
▭ ; DC voltage (V) at play state.
⇦mA ; DC current at play state.
Value in ( ) is DC current at stop state.

4.OTHERS :
➡ ; Signal route.
⊘ ; Adjusting point
The ⚠ mark found on some component parts indicates the inportance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
PRIMARY BOARD ASSEMBLY
S1 POWER

FUNCTION A BOARD ASSEMBLY
S401 ⏭
S402 ⏮] TRACK SEARCH
S403 PAUSE(⏸)
S404 PLAY(▷)
S405 OPEN/CLOSE(⏏)
S406 STOP(□)

FUNCTION B BOARD ASSEMBLY
S407 DISPLAY OFF
S408 OUTPUT

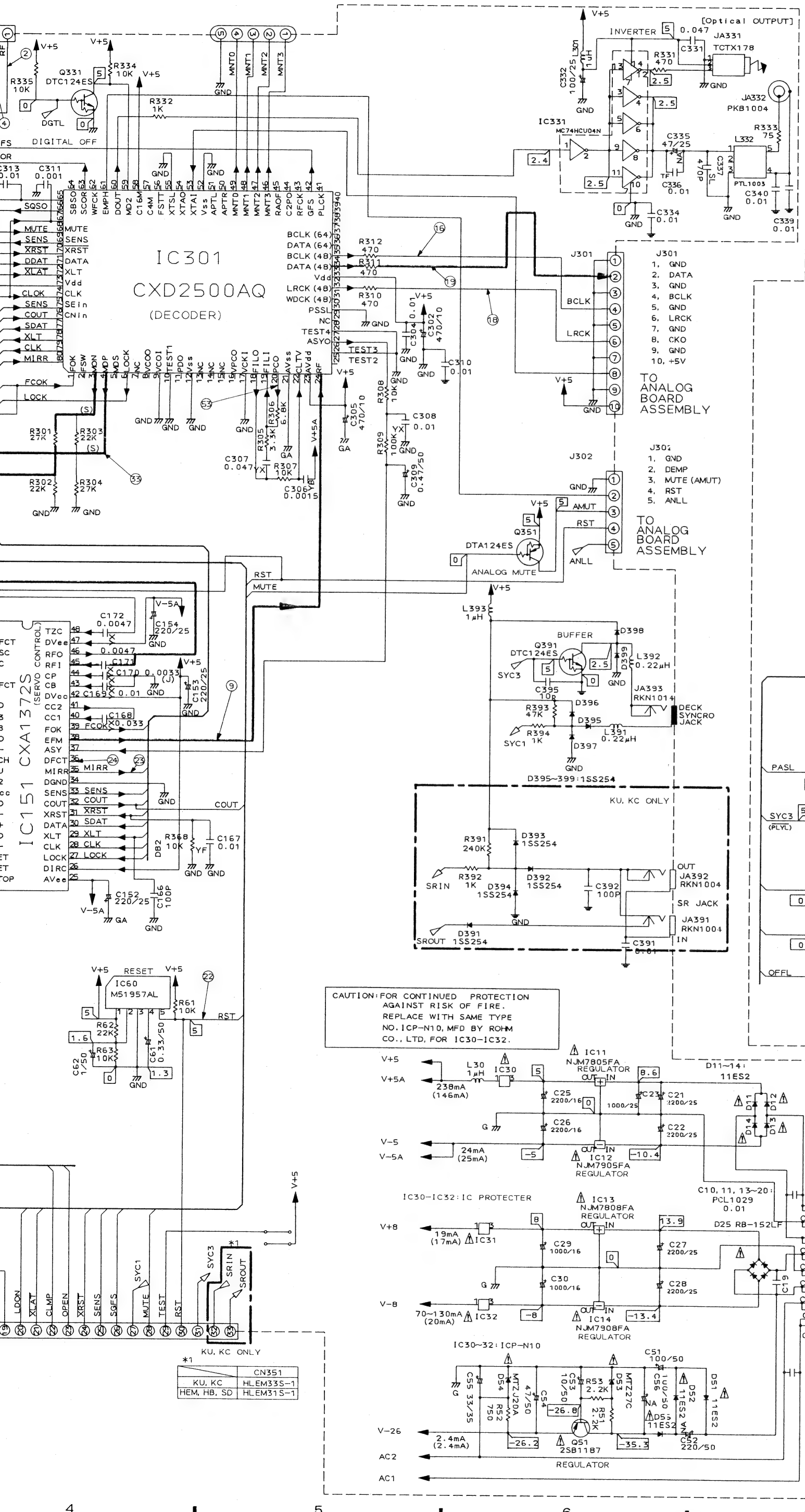
——— : RF&AUDIO SIGNAL
——(F)— : FOCUS SERVO SIGNAL
——(T)— : TRACKING SERVO SIGNAL
——(S)— : SPINDLE MOTOR SERVO SIGNAL
——(C)— : CARRIAGE MOTOR SERVO SIGNAL
——(L)— : LOADING MOTOR SERVO SIGNAL

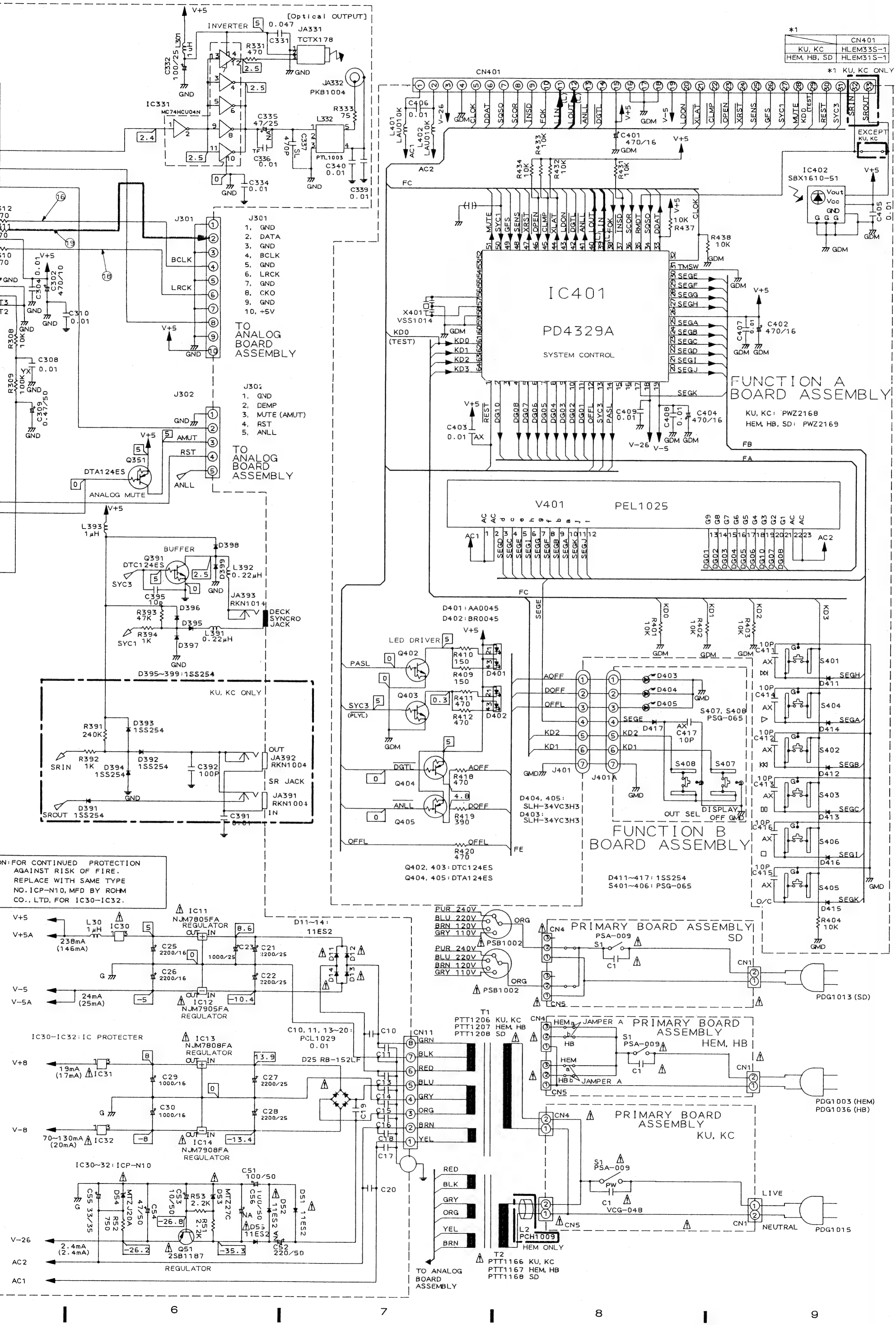
*1

	CN351
KU, KC	HLEM33S-1
HEM, HB, SD	HLEM31S-1

GRAM

OARD ASSEMBLIES



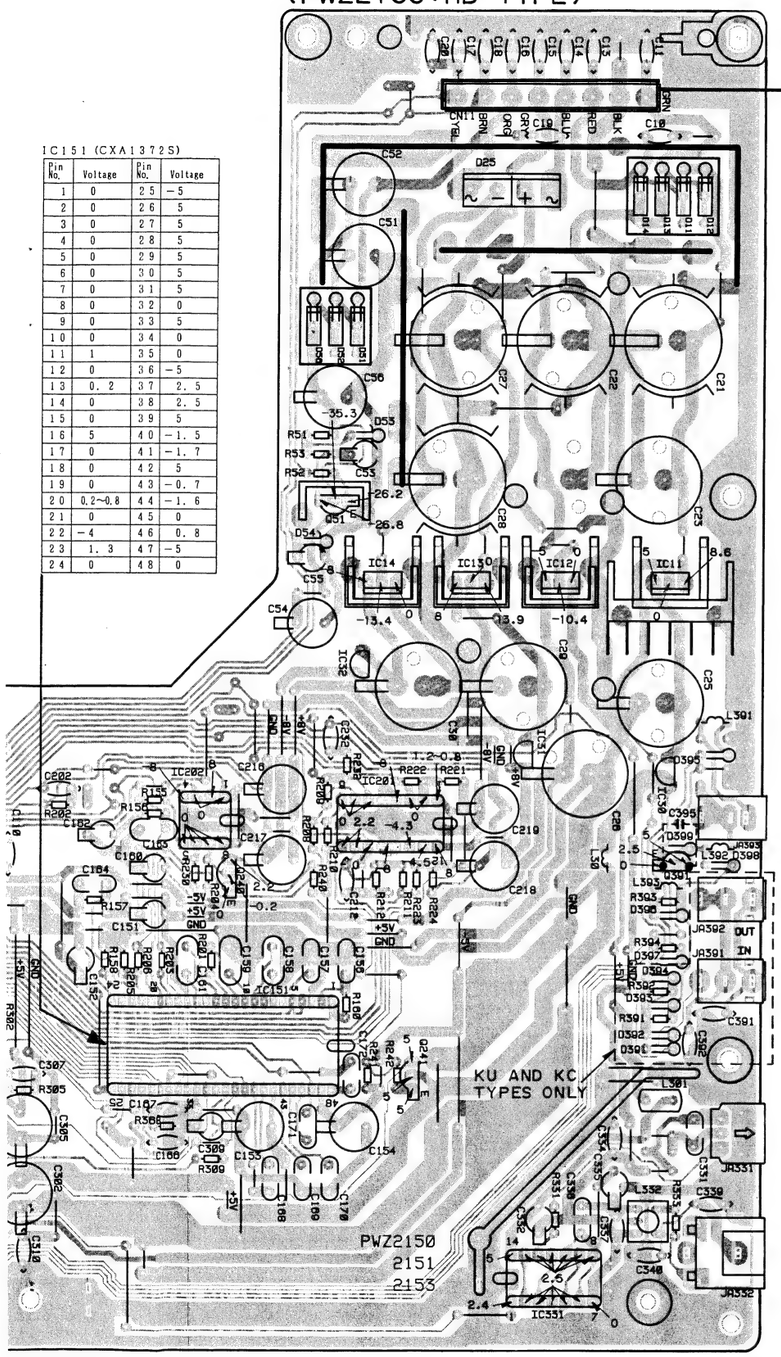


*1	CN401
KU, KC	HLEM33S-1
HEM, HB, SD	HLEM31S-1

MAIN BOARD ASSEMBLY
(PWZ2150:KU AND KC TYPES)
(PWZ2151:HEM AND SD TYPES)
(PWZ2153:HB TYPE)

IC151 (CXA1372S)

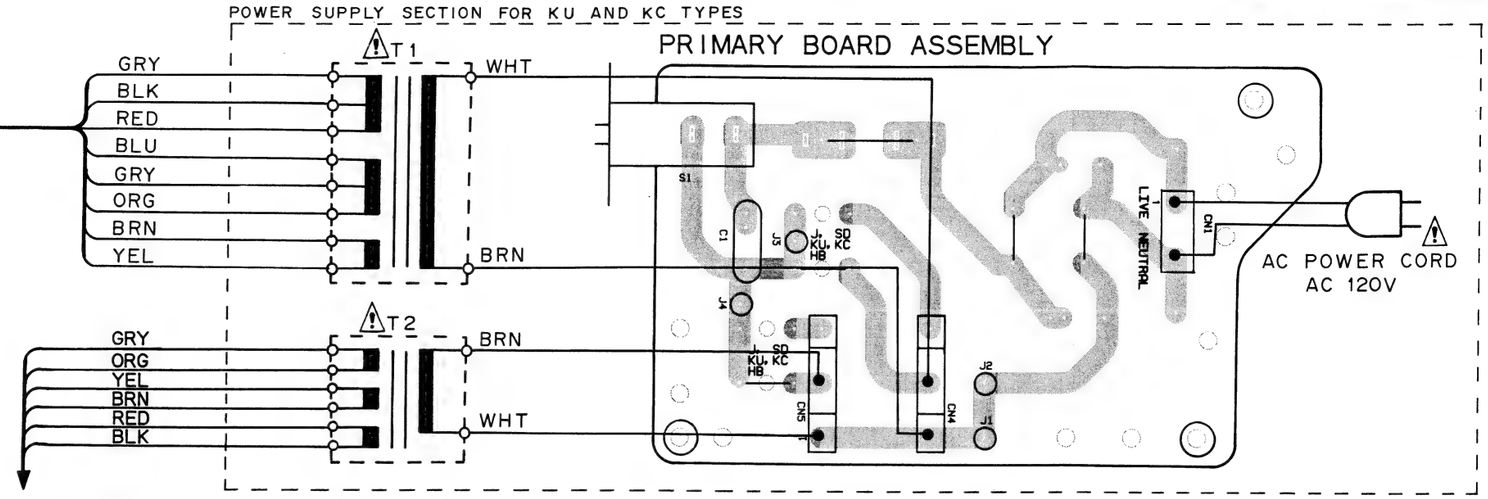
Pin No.	Voltage	Pin No.	Voltage
1	0	25	−5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	−5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	−1.5
17	0	41	−1.7
18	0	42	5
19	0	43	−0.7
20	0.2~0.8	44	−1.6
21	0	45	0
22	−4	46	0.8
23	1.3	47	−5
24	0	48	0



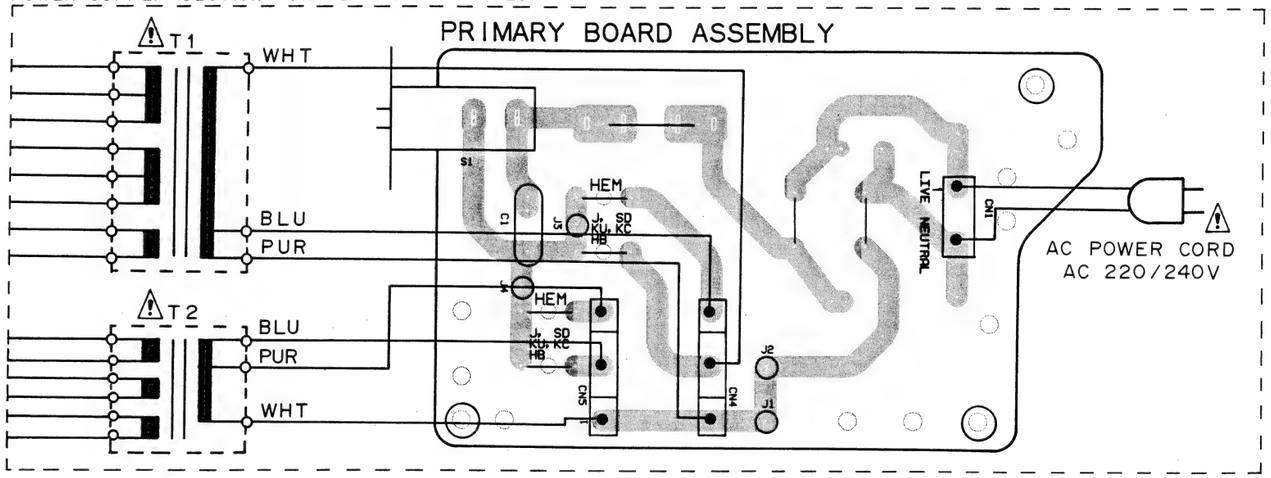
TO ANALOG BOARD ASSEMBLY

IC202 Q240 IC151 IC201 IC31 IC331 IC30
Q51 IC32 Q241 Q391
IC14 IC13 IC12 IC11

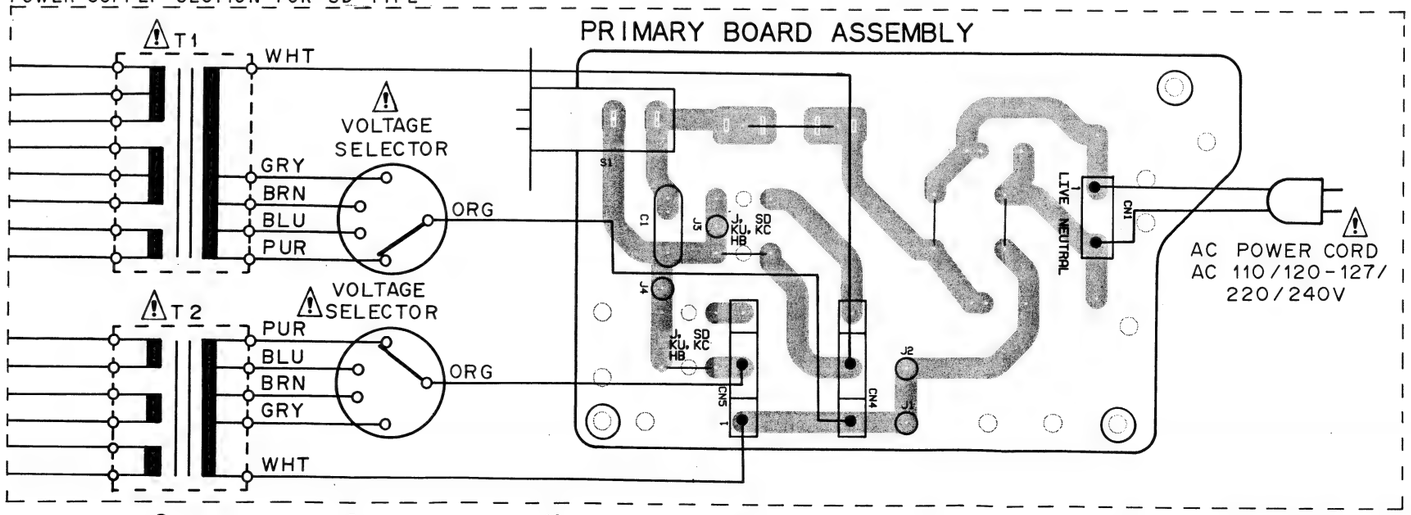
POWER SUPPLY SECTION FOR KU AND KC TYPES

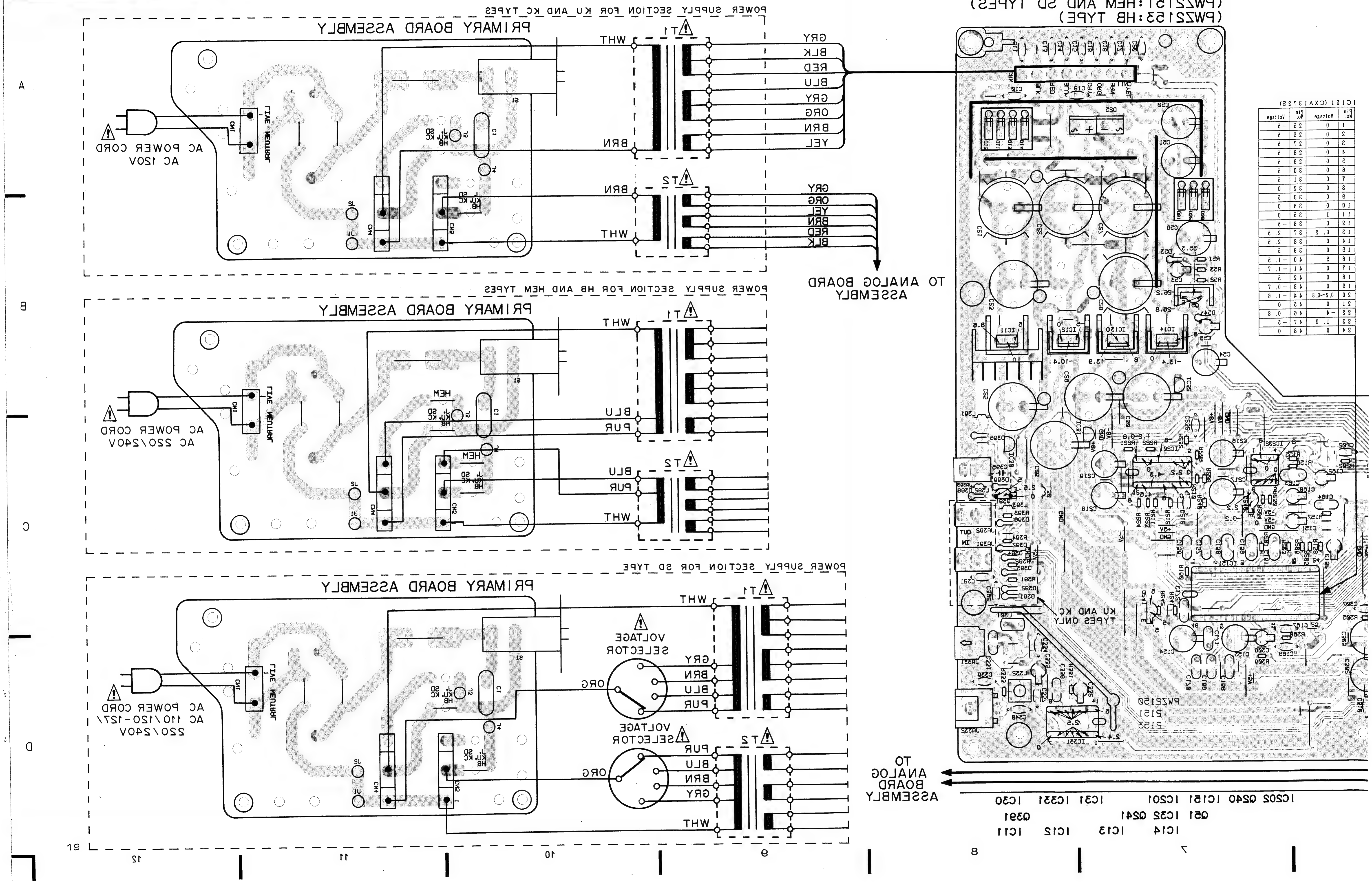


POWER SUPPLY SECTION FOR HB AND HEM TYPES



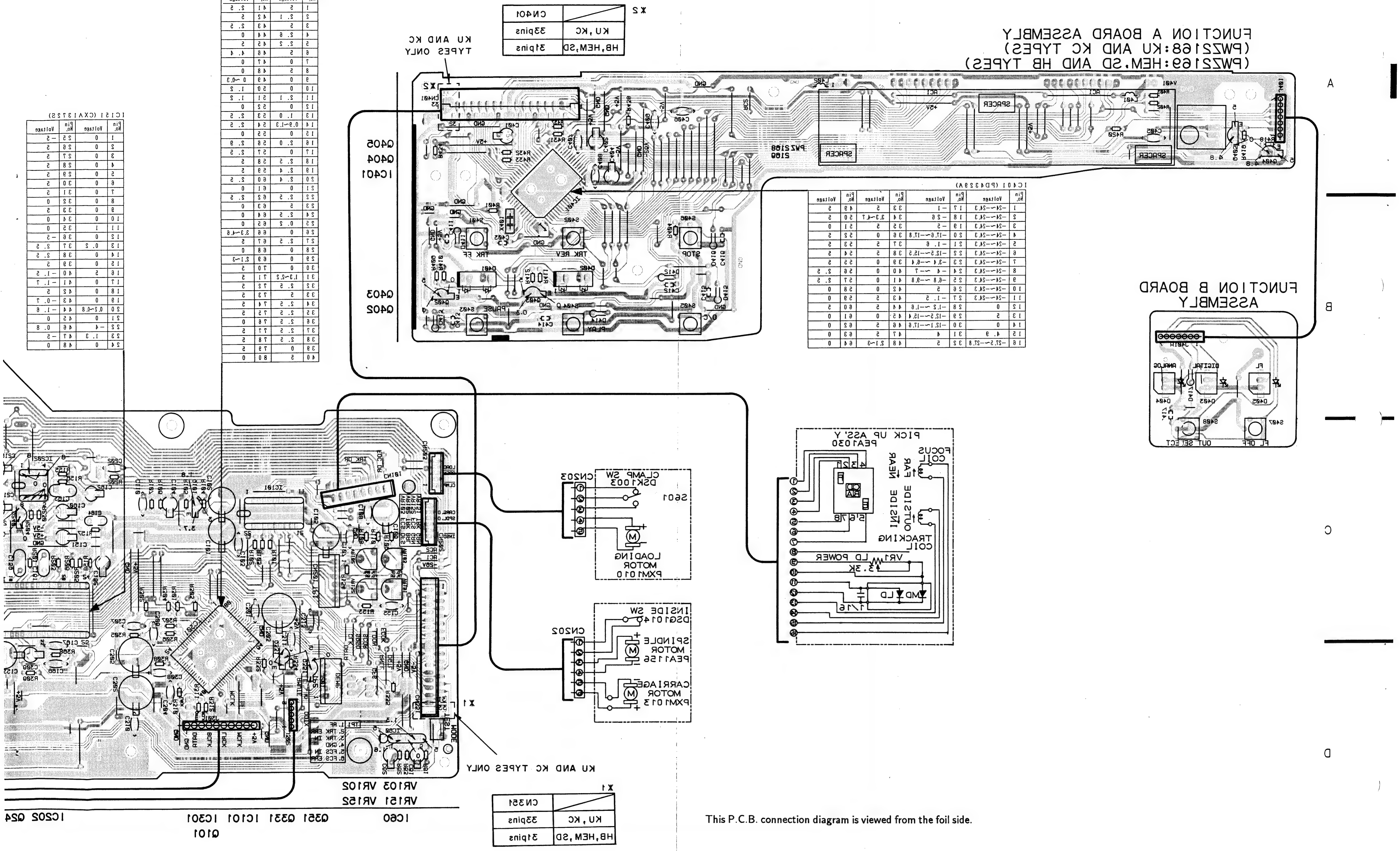
POWER SUPPLY SECTION FOR SD TYPE





IC151 (CXA1372S)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	−5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	−5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	−1.5
17	0	41	−1.7
18	0	42	5
19	0	43	−0.7
20	0.2~0.8	44	−1.6
21	0	45	0
22	−4	46	0.8
23	1.3	47	−5
24	0	48	0



X2

	CN401
KU,KC	33pins
HB,HEM,SD	31pins

X1

	CN351
KU,KC	33pins
HB,HEM,SD	31pins

IC301 (CXD2500AQ)

Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0~0.3
10	0	50	1.2
11	2.1	51	1.2
12	0	52	0
13	1.0	53	2.5
14	0.9~1.3	54	2.5
15	0	55	0
16	2.0	56	2.9
17	0	57	2.5
18	2.5	58	5
19	2.4	59	5
20	2.4	60	2.5
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3~4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1~3
30	0	70	5
31	1.3~2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC151 (CXA1372S)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	−5
2	0	26	5
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	5
10	0	34	0
11	1	35	0
12	0	36	−5
13	0.2	37	2.5
14	0	38	2.5
15	0	39	5
16	5	40	−1.5
17	0	41	−1.7
18	0	42	5
19	0	43	−0.7
20	0.2~0.8	44	−1.6
21	0	45	0
22	−4	46	0.8
23	1.3	47	−5
24	0	48	0

IC401 (PD4329A)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	−24~−24.3	17	−1	33	5	49	5
2	−24~−24.3	18	−26	34	3.3~4.7	50	5
3	−24~−24.3	19	−5	35	5	51	0
4	−24~−24.3	20	−17.6~−17.8	36	0	52	5
5	−24~−24.3	21	−1.6	37	5	53	5
6	−24~−24.3	22	−12.5~−15.5	38	5	54	5
7	−24~−24.3	23	−3.4~−6.4	39	0	55	5
8	−24~−24.3	24	−4~−7	40	0	56	2.5
9	−24~−24.3	25	−6.8~−9.8	41	0	57	2.5
10	−24~−24.3	26	5	42	0	58	0
11	−24~−24.3	27	−1.5	43	5	59	0
12	0	28	−1.2~−1.6	44	5	60	5
13	5	29	−12.5~−15.4	45	0	61	0
14	0	30	−12.1~−17.6	46	5	62	0
15	4.9	31	4	47	5	63	0
16	−27.5~−27.8	32	5	48	2.1~3	64	0

This P.C.B. connection diagram is viewed from the foil side.

4.2 ANALOG BOARD ASSEMBLY(PWM 1490)

ANALOG BOARD ASSEMBLY
(PWM1490:KU,KC,HEM AND SD TYPES)
(PWM1492:HB TYPE)

*1

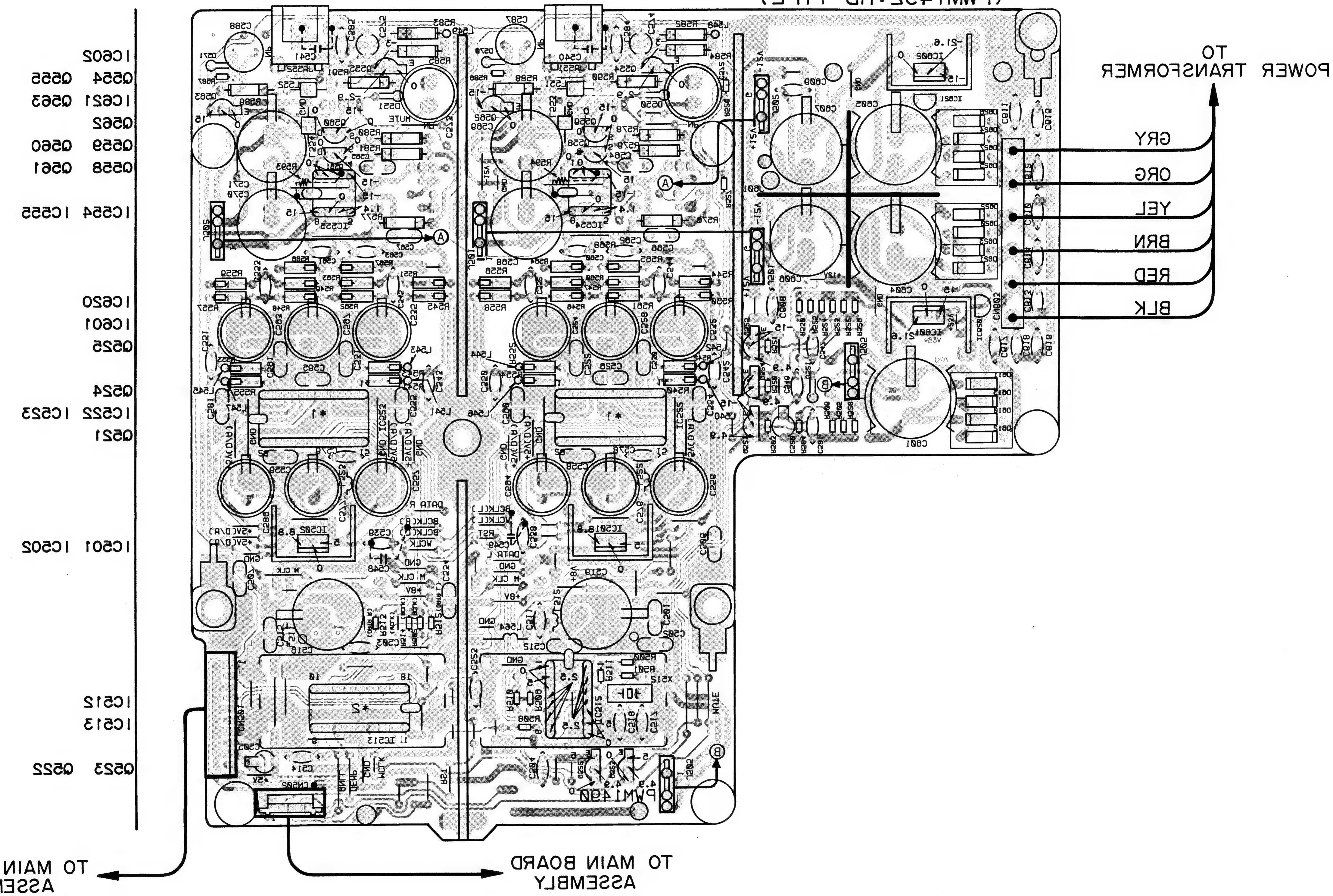
IC522, IC523 (PD2028A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	2.6	16	5
3	2	17	5
4	0	18	0
5	5	19	3.8
6	5	20	2.2
7	2.3	21	0
8	2.5	22	0
9	0	23	0
10	5	24	0
11	0	25	3.2
12	2	26	2.5
13	2.6	27	0
14	0	28	5

*2

IC513 (SM5840CP)

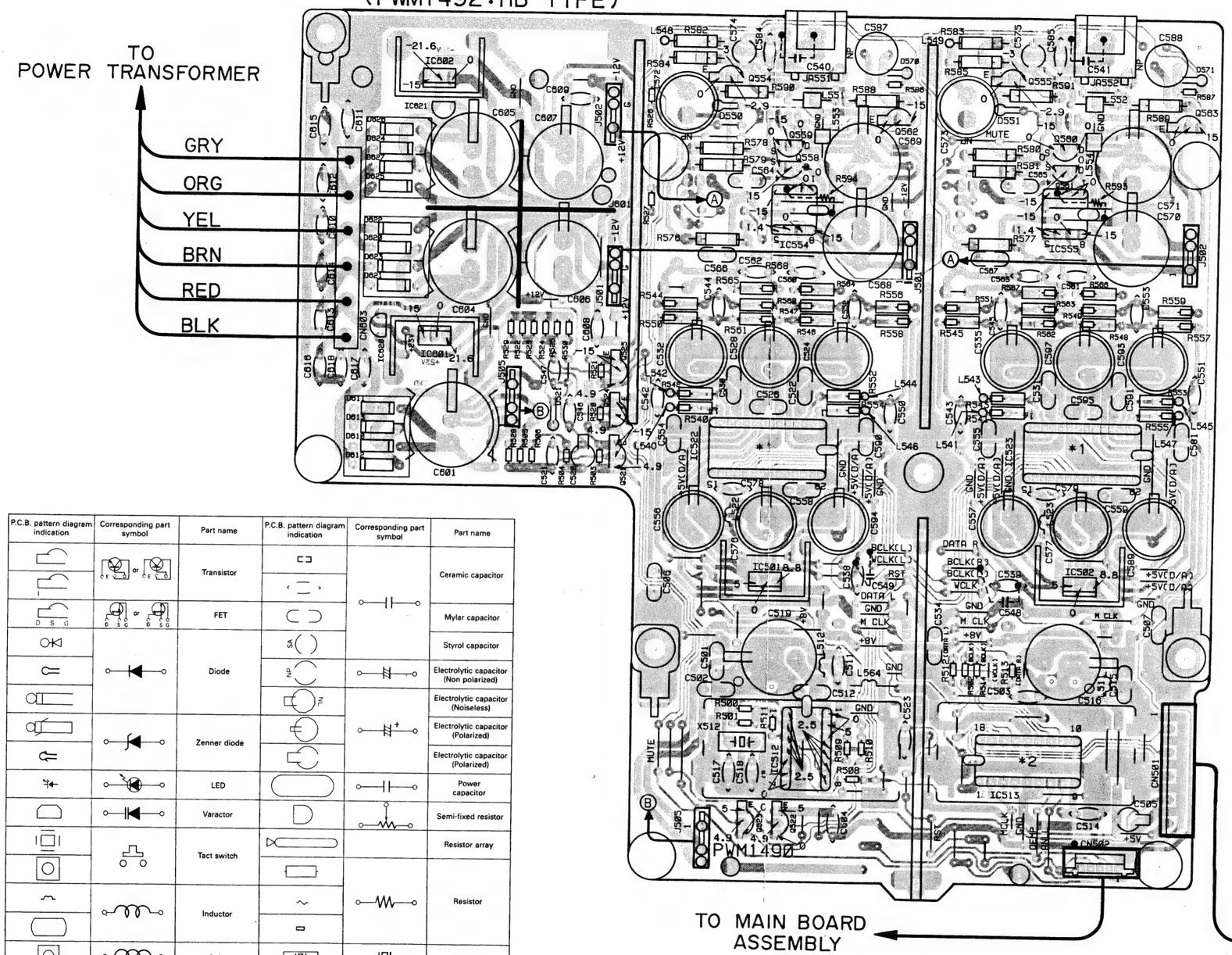
Pin No.	Voltage
1	5
2	2.5
3	2.6
4	2.4
5	0
6	0
7	0
8	0
9	4
10	3
11	3.6
12	3.2
13	3.6
14	5
15	1.4
16	2.5
17	2.4
18	0



This P.C.B. connection diagram is viewed from the foil side.

4.2 ANALOG BOARD ASSEMBLY(PWM 1490)

ANALOG BOARD ASSEMBLY
(PWM1490:KU,KC,HEM AND SD TYPES)
(PWM1492:HB TYPE)



IC602
Q554 Q555
IC621 Q563
Q562
Q559 Q560
Q558 Q561

IC554 IC555

IC620
IC601
Q525

Q524
IC522 IC523
Q521

IC501 IC502

IC512
IC513

Q523 Q522

*1

IC522, IC523 (PD2028A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	2.6	16	5
3	2	17	5
4	0	18	0
5	5	19	3.8
6	5	20	2.2
7	2.3	21	0
8	2.5	22	0
9	0	23	0
10	5	24	0
11	0	25	3.2
12	2	26	2.5
13	2.6	27	0
14	0	28	5

*2

IC513 (SM5840CP)

Pin No.	Voltage
1	5
2	2.5
3	2.6
4	2.4
5	0
6	0
7	0
8	0
9	4
10	3
11	3.6
12	3.2
13	3.6
14	5
15	1.4
16	2.5
17	2.4
18	0

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with O shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

*1	L540–L547
KU, KC, SD, HEM	USED
HB	SHORT (JUMPER)

TO MAIN BOARD ASSEMBLY

TO MAIN BOARD ASSEMBLY

L540–L547: PTH1010 (FERRITE BEADS)

PWM1490 (KU, KC, SD, HEM) PWM1492 (HB)
ANALOG BOARD ASSEMBLY

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC620 AND IC621.

AUDIO SIGNAL

*1	L540–L547
KU, KC, SD, HEM	USED
HB	SHORT (JUMPER)

L540–L547: PTH1010 (FERRITE BEADS)

Q554, 555, 562, 563: 2SC3068
Q558, 561: 2SK246
Q559, 560: 2SJ103
IC554, 555: NJM5532DD
C572, 573: PCH1094
C584, 585: PCL1029
L551~554: VTH1013 (FERRITE BEADS)
L548, 549: PTH1010 (FERRITE BEADS)

PWM1490 (KU, KC, SD, HEM) PWM1492 (HB)
ANALOG BOARD ASSEMBLY

——— AUDIO SIGNAL

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N15. MFD BY ROHM CO., LTD. FOR IC620 AND IC621.

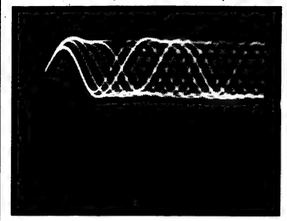
4.3 WAVEFORMS

Note: The encircled numbers denote measuring in the schematic diagram.

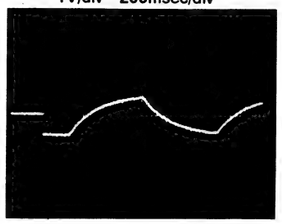
*1 50T-JUMP: After switching to the pause mode, press the manual search key.

*2 FOCUS-IN: Press the key without loading a disc.

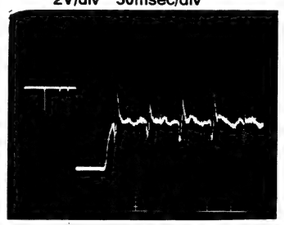
② TP1 - Pin 1:PLAY MODE
(RF)
500mV/div 500nsec/div



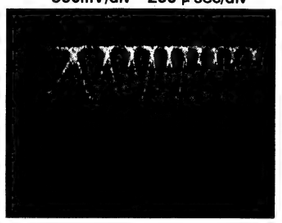
⑤ IC202-Pin 1 :FOCUS-IN(*2)MODE
(FODR)
1V/div 200msec/div



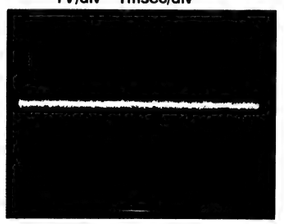
⑦ IC201-Pin 9:TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



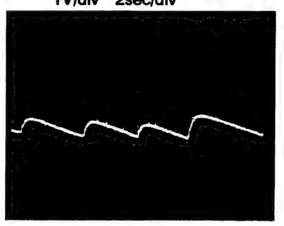
② TP1 - Pin 1:TRACK SEARCH MODE
(RF)
500mV/div 200 μ sec/div



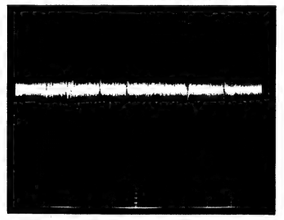
⑤ IC202-Pin 1 :PLAY MODE
(FODR)
1V/div 1msec/div



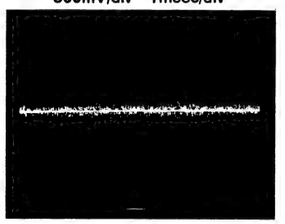
⑧ IC201 - Pin 4:PLAY MODE
(CADR)
1V/div 2sec/div



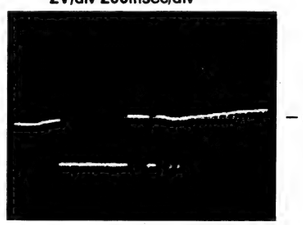
③ TP1 - Pin 6:PLAY MODE
(FOER)
100mV/div 10msec/div



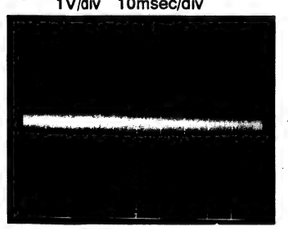
⑥ IC202 - Pin 3:PLAY MODE
(TRDR)
500mV/div 1msec/div



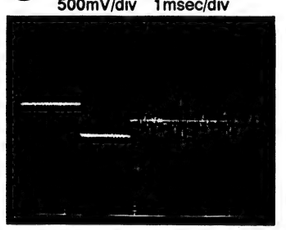
⑧ IC201 - Pin 4:TRACK SEARCH MODE
(CADR)
2V/div 200msec/div



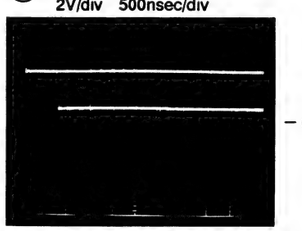
④ TP1 - Pin 2:PLAY MODE
(TRER)
1V/div 10msec/div



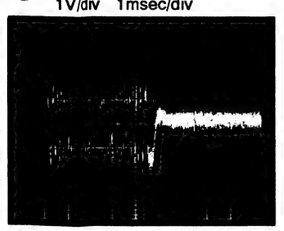
⑥ IC202 - Pin 3:50T - JUMP (*1) MODE
(TRDR)
500mV/div 1msec/div



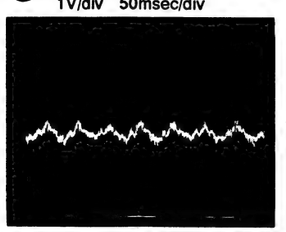
⑨ IC151 - Pin 38:PLAY MODE
(EFM)
2V/div 500nsec/div



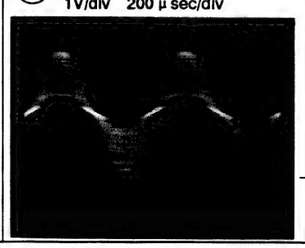
④ TP1 - Pin 2:50T - JUMP (*1) MODE
(TRER)
1V/div 1msec/div



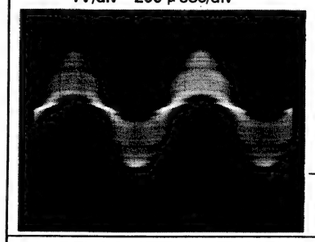
⑦ IC201-Pin 9:PLAY MODE
(SPDR)
1V/div 50msec/div



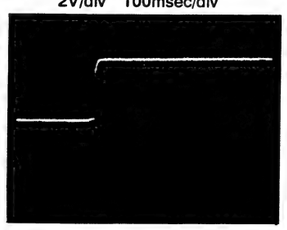
⑩ IC522-Pin 13 :PLAY MODE(1kHz)
($\overline{LO}$) (D/A DATA OUT)
1V/div 200 μ sec/div



⑪ IC522-Pin 14 :PLAY MODE(1kHz)
(LO) (D/A DATA OUT)
1V/div 200 μ sec/div

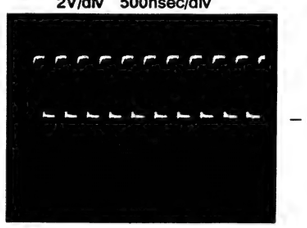


㉒ IC60-Pin 5 :POWER SWITCH-ON
(RST)
2V/div 100msec/div

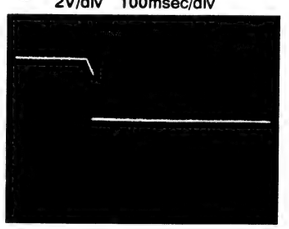


㉖

⑯ IC301 - Pin 35:PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div

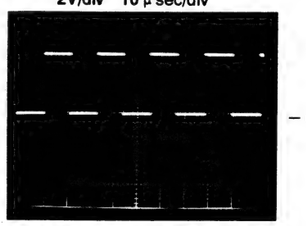


㉒ IC60-Pin 5 :POWER SWITCH-OFF
(RST)
2V/div 100msec/div

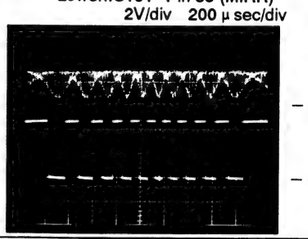


㉗

⑱ IC301 - Pin 32:PLAY MODE (1kHz)
(LRCK)
2V/div 10 μ sec/div



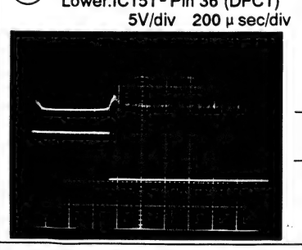
㉓ :TRACK SEARCH MODE
Upper:TP1 - Pin 1 (RF) 1V/div
Lower:IC151 - Pin 35 (MIRR)
2V/div 200 μ sec/div



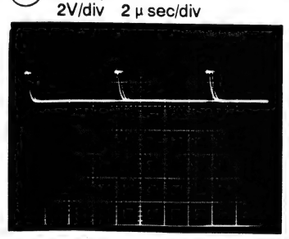
㉘

⑲ IC301 - Pin 34:PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div

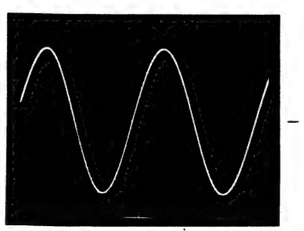
㉔ :PLAY MODE
Upper:TP1 - Pin 1 (RF) 1V/div
Lower:IC151 - Pin 36 (DFCT)
5V/div 200 μ sec/div



㉝ IC301 - Pin 4:PLAY MODE
(MDP)
2V/div 2 μ sec/div

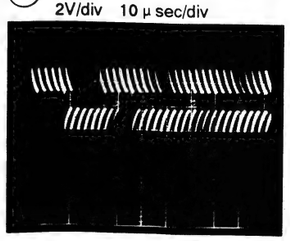


㉑ Pin - OUTPUT:PLAY MODE(1kHz)
1V/div 20 μ sec/div



㉕

㊸ IC301 - Pin 20:PLAY MODE
(PCO)
2V/div 10 μ sec/div



5. P

NOTES :

- *Parts*
- *Parts unava*
- *The ⚠ There*
- *When*

Ex.1

Ex.2

Mark No.

◉ANALO

SEMICONI

⚠ IC501
IC512
IC513
IC522
IC554

⚠ IC601
⚠ IC602
⚠ IC620

Q521
Q522,
Q524,
Q554,
Q558

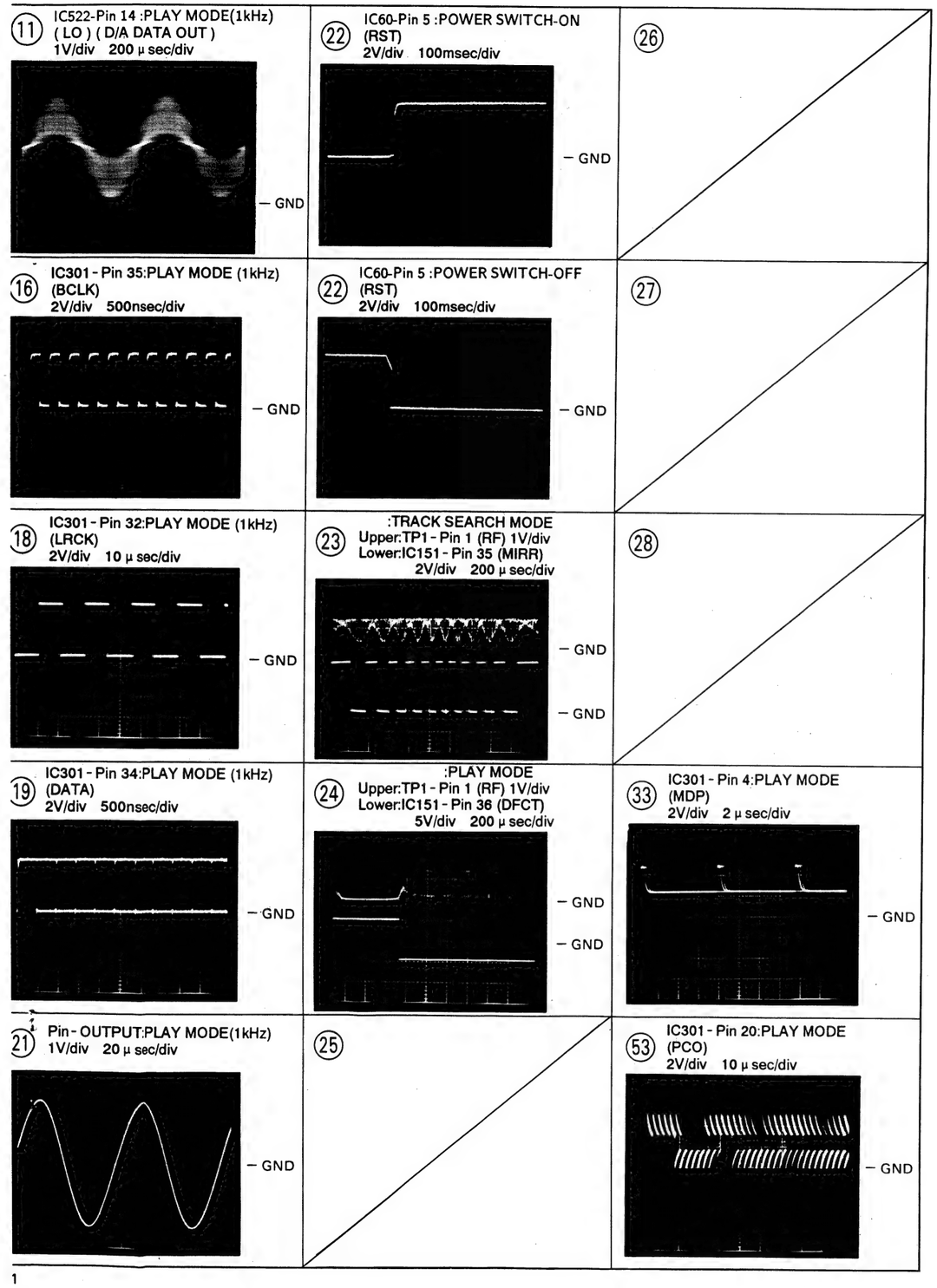
Q559,
Q561
Q562,

D521
D550,
D570,
⚠ D610-
⚠ D620-

COILS AN

L511,
L522,
L525,
L540-
L551-

L564



5. P.C.B.'s PARTS LIST

NOTES :

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω 56 × 10¹ 561 ..... RD1/4PS 5 6 1 J
47kΩ 47 × 10³ 473 ..... RD1/4PS 4 7 3 J
0.5Ω 0R5 ..... RD2H 0 R 5 K
1Ω 010 ..... RD1P 0 1 0 K

Ex.2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ 562 × 10¹ 5621 ..... RD1/4SR 5 6 2 1 F

Mark	No.	Description	Parts No.
		◉ANALOG BOARD ASSEMBLY (PWM1490)	
		SEMICONDUCTORS	
⚠	IC501,IC502	REGULATOR IC	NJM7805FA
	IC512	LOGIC IC	TC74HCU04AP
	IC513	DIGITAL FILTER,IC	SM5840CP
	IC522,IC523	D/A CONVERTER,IC	PD2028A
	IC554,IC555	OP-AMP IC	NJM5532DD
⚠	IC601	REGULATOR IC	NJM7812FA
⚠	IC602	REGULATOR IC	NJM7912FA
⚠	IC620,IC621	IC PROTECTOR	ICP-N15
	Q521	TRANSISTOR	DTC124ES
	Q522,Q523	TRANSISTOR	DTA124ES
	Q524,Q525	TRANSISTOR	DTC124ES
	Q554,Q555	TRANSISTOR	2SC3068
	Q558	TRANSISTOR	2SK246
	Q559,Q560	FET	2SJ103
	Q561	TRANSISTOR	2SK246
	Q562,Q563	TRANSISTOR	2SC3068
	D521	DIODE	1SS254
	D550,D551	DIODE	1SS254
	D570,D571	DIODE	1SS254
⚠	D610-D613	DIODE	10DF2
⚠	D620-D627	DIODE	10DF2
		COILS AND FILTERS	
	L511,L512	AXIAL INDUCTOR	LAU010K
	L522,L523	AXIAL INDUCTOR	LAU010K
	L525,L526	AXIAL INDUCTOR	LAU010K
	L540-L549	FERRITE BEADS	PTH1010
	L551-L554	FERRITE BEADS	VTH1013
	L564		PTH1006

Mark	No.	Description	Parts No.
		CAPACITORS	
	C501,C502	AUDIO FILM CAPACITOR	CFTXA104J50
	C503,C504	CERAMIC CAPACITOR	PCL1029
	C505	ELECTR.CAPACITOR	CEAS101M25
	C506,C507	AUDIO FILM CAPACITOR	CFTXA104J50
	C511	CERAMIC CAPACITOR	PCL1029
	C512	AUDIO FILM CAPACITOR	CFTXA103J50
	C514	CERAMIC CAPACITOR	CGCYF473Z25
	C515	AUDIO FILM CAPACITOR	CFTXA103J50
	C516	ELECTR.CAPACITOR	CEAS102M16
	C517,C518	CERAMIC CAPACITOR	CCCCH120J50
	C519	ELECTR.CAPACITOR	CEAS102M16
	C520	ELECTR.CAPACITOR	CEAS470M50
	C521	MYLOR FILM CAPACITOR	CQMA473J50
	C522	MYLOR FILM CAPACITOR	CQMA104J50
	C523	CERAMIC CAPACITOR	PCL1029
	C524	ELECTR.CAPACITOR	CEAS102M16
	C526	MYLOR FILM CAPACITOR	CQMA104J50
	C528	ELECTR.CAPACITOR	CEAS102M16
	C530,C531	MYLOR FILM CAPACITOR	CQMA104J50
	C532	ELECTR.CAPACITOR	CEAS102M16
	C534	AUDIO FILM CAPACITOR	CFTXA104J50
	C535	ELECTR.CAPACITOR	CEAS102M16
	C538,C539	CERAMIC CAPACITOR	CCCCH120J50
	C540,C541	CERAMIC CAPACITOR	CCDCH221J50
	C542,C543	CERAMIC CAPACITOR	CCCCH181J50
	C544,C545	CERAMIC CAPACITOR	CCCCH330J50
	C546,C547	CERAMIC CAPACITOR	CGCYF473Z25
	C548,C549	CERAMIC CAPACITOR	CCDCH080D50
	C550,C551	CERAMIC CAPACITOR	CCCCH181J50
	C552,C553	CERAMIC CAPACITOR	CCCCH330J50
	C554,C555	MYLOR FILM CAPACITOR	CQMA104J50
	C556,C557	ELECTR.CAPACITOR	CEAS102M16
	C558,C559	MYLOR FILM CAPACITOR	CQMA104J50
	C560-C563	CERAMIC CAPACITOR	CCCCH470J50
	C564,C565	MYLOR FILM CAPACITOR	CQMA681J50

Mark	No.	Description	Parts No.
	C566,C567	MYLOR FILM CAPACITOR	CQMA562J50
	C568-C571	ELECTR.CAPACITOR	CEAS471M50
	C572,C573	ELECTROLYTIC CAPACIT	PCH1094
	C574,C575	PL.STYRENE CAPACITOR	CQSA102J50
	C576,C577	ELECTR.CAPACITOR	CEAS102M16
	C578,C579	CERAMIC CAPACITOR	PCL1029
	C581	MYLOR FILM CAPACITOR	CQMA104J50
	C584,C585	CERAMIC CAPACITOR	PCL1029
	C587,C588	ELECTR.CAPACITOR	CEANP220M25
	C589	ELECTR.CAPACITOR	CEAS102M16
	C590,C591	MYLOR FILM CAPACITOR	CQMA104J50
	C593,C594	ELECTR.CAPACITOR	CEAS102M16
	C595	MYLOR FILM CAPACITOR	CQMA104J50
	C597	ELECTR.CAPACITOR	CEAS102M16
	C601	ELECTROLYTIC CAPACIT	CENA102M35
	C604,C605	ELECTR. CAPACITOR	PCH1102
	C606,C607	ELECTROLYTIC CAPACIT	CENA102M35
	C608-C618	CERAMIC CAPACITOR	PCL1029

RESISTORS

	R540-R567	CARBON FILM RESISTOR	RD1/4PM□□□J
	R576-R581	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R582-R585	CARBON FILM RESISTOR	RDR1/2PM□□□J
	R588,R589	CARBON FILM RESISTOR	RDR1/2PM271J
	R590,R591	CARBON FILM RESISTOR	RDR1/4PM511J
	R593,R594	CARBON FILM RESISTOR	RDR1/4PM331J
	Other resistors		RD1/6PM□□□J

OTHERS

	CN501	CONNECTOR(10P)	KPC10
	JA551	1P PIN JACK(W)	RKB1010
	JA552	1P PIN JACK (R)	RKB1011
	X512	XTAL RES (OSC)	PSS1011
		SCREW	BBZ30P080FCC

◉MAIN BOARD ASSEMBLY (PWZ2150)

SEMICONDUCTORS

⚠	IC11	REGULATOR IC	NJM7805FA
	IC12	REGULATOR IC	NJM7905FA
⚠	IC13	REGULATOR IC	NJM7808FA
⚠	IC14	REGULATOR IC	NJM7908FA
⚠	IC30-IC32	IC PROTECTOR	ICP-N10
	IC60	SYSTEM RESET IC	M51957AL
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372S
⚠	IC201	POWER OP-AMP,IC	LA6520
⚠	IC202	POWER OP-AMP,IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC331	IC	MC74HCU04N
⚠	Q51	TRANSISTOR	2SB1187
	Q101	TRANSISTOR	2SA854S
	Q240	TRANSISTOR	2SA933S
	Q241	TRANSISTOR	2SC1740S
	Q331	TRANSISTOR	DTC124ES
	Q351	TRANSISTOR	DTA124ES
	Q391	TRANSISTOR	DTC124ES
⚠	D11-D14	DIODE	11ES2
⚠	D25		RB-152LF
⚠	D51,D52	DIODE	11ES2
⚠	D53	ZENER DIODE	MTZ27C
⚠	D54	ZENER DIODE	MTZJ20A
⚠	D56	DIODE	11ES2
	D391-D399	DIODE	1SS254

COILS AND FILTERS

	L30	AXIAL INDUCTOR	LAU010K
	L301	RADIAL INDUCTOR	LRA010K
	L332	COIL	PTL1003
	L391,L392	AXIAL COIL	LAUR22K
	L393	AXIAL INDUCTOR	LAU010K

CAPACITORS

	C10,C11	CERAMIC CAPACITOR	PCL1029
	C13-C20	CERAMIC CAPACITOR	PCL1029
	C21,C22	ELECTR.CAPACITOR	CEAS222M25
	C23	ELECTR.CAPACITOR	CEAS102M25
	C25,C26	ELECTR.CAPACITOR	CEAS222M16
	C27,C28	ELECTR.CAPACITOR	CEAS222M25
	C29,C30	ELECTR.CAPACITOR	CEAS102M16
	C51	ELECTR.CAPACITOR	CEAS101M50
	C52	ELECTR.CAPACITOR	CEAS221M50
	C53	ELECTR.CAPACITOR	CEAS100M50
	C54	ELECTR.CAPACITOR	CEAS470M50
	C55	ELECTROLYTIC CAPACIT	CEAS330M35
	C56	ELECTR.CAPACITOR	CEAS101M50
	C61	ELECTR.CAPACITOR	CEASR33M50
	C62	ELECTR.CAPACITOR	CEAS010M50
	C101,C102	ELECTR.CAPACITOR	CEAS221M25
	C103	CERAMIC CAPACITOR	CCCCH200J50
	C104	ELECTR.CAPACITOR	CEAS101M10
	C105,C106	ELECTR.CAPACITOR	CEAS221M25
	C107,C108	CERAMIC CAPACITOR	CGCYX103K25
	C110	CERAMIC CAPACITOR	CKCYF103Z50
	C151-C154	ELECTR.CAPACITOR	CEAS221M25
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158,C159	MYLOR FILM CAPACITOR	CQMA104K50
	C160	ELECTR.CAPACITOR	CEAS4R7M50
	C161	MYLOR FILM CAPACITOR	CQMA104K50
	C162	ELECTR.CAPACITOR	CEAS010M50
	C163	MYLOR FILM CAPACITOR	CQMA104K50
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C166	CERAMIC CAPACITOR	CCCSL101J50
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX103K25

Mark	No.	Description	Parts No.
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171,C172	CERAMIC CAPACITOR	CKCYB472K50
	C202	CERAMIC CAPACITOR	CKCYF103Z50
	C212	CERAMIC CAPACITOR	CKCYB272K50
	C216-C219	ELECTR.CAPACITOR	CEAS221M25
	C232	CERAMIC CAPACITOR	CKCYF103Z50
	C301	CERAMIC CAPACITOR	CGCYX103K25
	C302,C303	ELECTR.CAPACITOR	CEAS471M10
	C304	CERAMIC CAPACITOR	CGCYX103K25
	C305	ELECTR.CAPACITOR	CEAS471M10
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CGCYX103K25
	C309	ELECTR.CAPACITOR	CEASR47M50
	C310	CERAMIC CAPACITOR	CKCYF103Z50
	C311	CERAMIC CAPACITOR	CKCYB102K50
	C313	CERAMIC CAPACITOR	CKCYF103Z50
	C331	CERAMIC CAPACITOR	CGCYX473K25
	C332	ELECTR.CAPACITOR	CEAS101M25
	C334	CERAMIC CAPACITOR	CGCYX103K25
	C335	ELECTR.CAPACITOR	CEAS470M25
	C336	AUDIO FILM CAPACITOR	CFTXA103J50
	C337	CERAMIC CAPACITOR	CCCSL471J50
	C339,C340	CERAMIC CAPACITOR	CGCYX103K25
	C391	CERAMIC CAPACITOR	CGCYX103K25
	C392	CERAMIC CAPACITOR	CCCSL101J50
	C395	CERAMIC CAPACITOR	CCDSL100D50
RESISTORS			
	VR102	VR	VRTB6VS223
	VR103	VR	VRTB6VS102
	VR151	VR	VRTB6VS223
	VR152	VR	VRTB6VS223
	Other resistors		RD1/6PM□□□J
OTHERS			
	CN101	CONNECTOR	52045-1610
	CN351	CONNECTOR	HLEM33S
	JA331	OPTICAL OUTPUT JACK	TOTX178
	JA332	JACK	PKB1004
	JA391,JA392	JACK	RKN1004
	JA393	JACK	RKN1014

PRIMARY BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SWITCHES			
⚠	S1	SWITCH (POWER)	PSA-009
CAPACITORS			
⚠	C1	CAPACITOR (CERAMIC)	VCG-048

Mark	No.	Description	Parts No.
◉FUNCTION A BOARD ASSEMBLY (PWZ2168)			
SEMICONDUCTORS			
	IC401	MICROCOMPUTER,IC	PD4329A
	Q402,Q403	TRANSISTOR	DTC124ES
	Q404,Q405	TRANSISTOR	DTA124ES
	D401	LED	AA0045
	D402	LED	BR0045
	D411-D416	DIODE	1SS254
SWITCHES			
	S401-S406	SWITCH (TRK FF, TRK REV, PAUSE / PLAY, OPEN/CLOSE, STOP)	PSG-065
FILTERS			
	L401,L402	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C401,C402	ELECTROLYTIC CAPACIT	CEJA470M16
	C403	CERAMIC CAPACITOR	CKPUYF103Z25
	C404	ELECTROLYTIC CAPACIT	CEJA470M16
	C405	CERAMIC CAPACITOR	CKPUYF103Z25
	C406-C408	CERAMIC CAPACITOR	CGCYX103K25
	C409	CERAMIC CAPACITOR	CKCYF103Z50
	C411-C416	AXIAL CERAMIC C.	CCPUCH100J50
RESISTORS			
	All resistors		RD1/6PM□□□J
OTHERS			
	CN401	CONNECTOR	HLEM33R
	V401	FL TUBE	PEL1025
	X401	CERAMIC RESONATOR	VSS1014
	REMOTE SENSOR		SBX1610

FUNCTION B BOARD ASSEMBLY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	D403	LED	SLH-34YC3H3
	D404	LED	SLH-34VC3H3
	D405	LED	SLH-34VC3H3
	D417	DIODE	1SS254
SWITCHES			
	S407,S408	SWITCH (DISPLAY OFF, OUTPUT)	PSG-065
CAPACITORS			
	C417	AXIAL CERAMIC C.	CCPUCH100J50

6. ADJUSTMENTS

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pick up or the circuitry. Adjust correctly following the adjustment procedure.

6-1. Adjustment items/verification item and order

Step	Item	Test point	Adjustment location
1	Focus offset adjustment	TP 1, Pin 6(FCS.ERR)	VR 103(FCS.OFS)
2	Grating adjustment	TP 1, Pin 2(TRK.ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP 1, Pin 2(TRK.ERR)	VR 102(TRK. BAL)
4	Pick up radial/tangential direction tilt adjustment	TP 1, Pin 1(RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment (RF level)	TP 1, Pin 1(RF)	VR 1(RF level)
6	Focus servo loop gain adjustment	TP 1, Pin 5(FCS.IN) TP 1, Pin 6(FCS.ERR)	VR 152(FCS.GAN)
7	Tracking servo loop gain adjustment	TP 1, Pin 3(TRK.IN) TP 1, Pin 2(TRK.ERR)	VR 151(TRK.GAN)
8	Focus error signal verification	TP 1, Pin 6(FCS.ERR)	—

- Abbreviation table

  FCS.ERR : Focus Error
  FCS.OFS : Focus Offset
  TRK.ERR : Tracking Error
  TRK.BAL : Tracking Balance
  FCS.GAN : Focus Gain
  TRK.GAN : Tracking Gain
  FCS.IN : Focus In
  TRK.IN : Tracking In

6-2. Measuring instruments and tools

1. Dual trace oscilloscope (10 : 1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low-pass filter (39 kΩ+ 0.001 μF)
5. Resistor (100 kΩ)
6. Standard tools

6-3. Test point and adjustment variable resistor positions

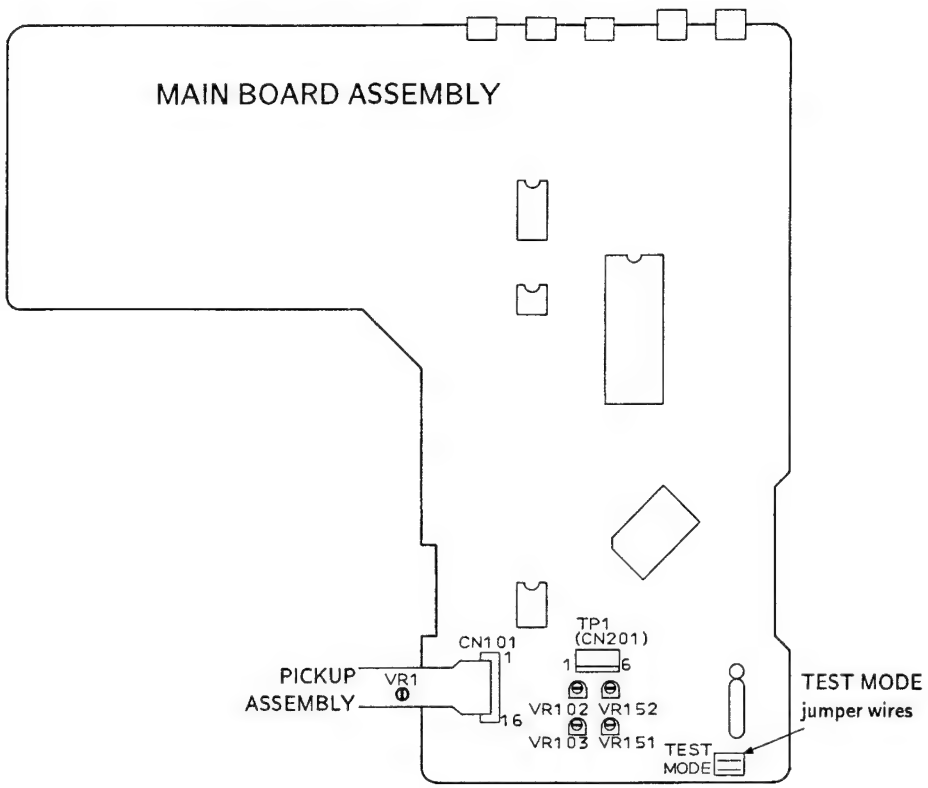


Figure 1 Adjustment Locations

6-4. Notes

1. Use a 10 : 1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10 : 1 probe is used.

6-5. Test mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Turn off the power switch.
2. Short the test mode jumper wires. (See Figure 1.)
3. Turn on the power switch.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat steps 1-3.

[Release from test mode]

Here is the procedure for releasing test mode :

1. Press the STOP key to stop all operations.
2. Turn off the power switch on the front panel.

[Operations of the keys in test mode]

Code	Key name	Function in test mode	Explanation
	OUTPUT	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.
▷	PLAY	Spindle servo On	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the periphery edge of the disc, the same symptom is occurred.
▯▯	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key name	Function in test mode	Explanation
⏮	TRACK REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup does not automatically stop at the mechanical end point in test mode, be careful with this operation.
⏭	TRACK FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the pickup does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	OPEN/CLOSE	Disc tray open/close	Opens/closes the disc tray. This key is a toggle key and open/close tray alternately.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

OUTPUT	Lights up the laser diode and closes the focus servo.
⇩	
PLAY ▷	Starts the spindle motor and closes the spindle servo.
⇩	
PAUSE ▯▯	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus offset adjustment

● Objective	Sets the DC offset for the focus error amp.		
● Symptom when out of adjustment	The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP 1, Pin 6 (FCS ERR). [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) VR 103 (FCS OFS) None needed

[Procedure]
Adjust VR 103 (FCS OFS) so that the DC voltage at TP 1, Pin 6 (FCS ERR) is -150 ± 50 mV.

2. Grating adjustment

● Objective	To align the tracking error generation laser beam spots to the optimum angle on the track.		
● Symptom when out of adjustment	Play does not start, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP 1, Pin 2 (TRK ERR) via a low pass filter. (See Figure 2) [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open. Pickup grating adjustment slit YEDS-7

[Procedure]

1. Move the pickup to midway across the disc(R=35 mm) with the TRACK FWD ⏭ or REV ⏮ key.

2. Press the OUTPUT key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.

3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.

4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again.
   Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.

   Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.
   Note : The amplitude of the tracking error signal is about 3 Vp-p (when a 39 kΩ + 0.001 μF low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), then the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.

5. Return the pickup to more or less midway across the disc with the TRACK REV ⏮ key, press the PAUSE ⏸ key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

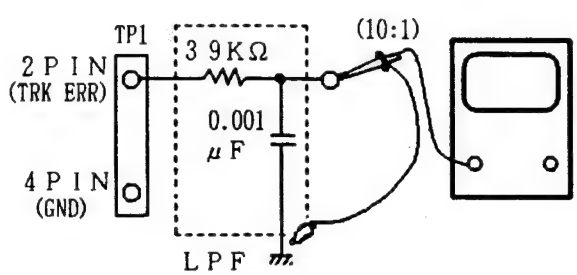
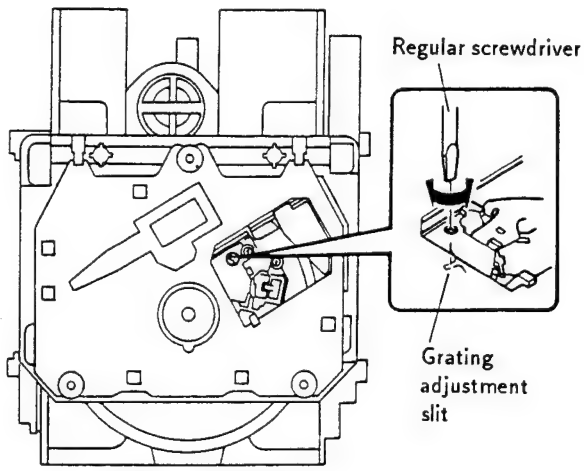


Figure 2



Adjustment locations

[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP 1 Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which wave form is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)
This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

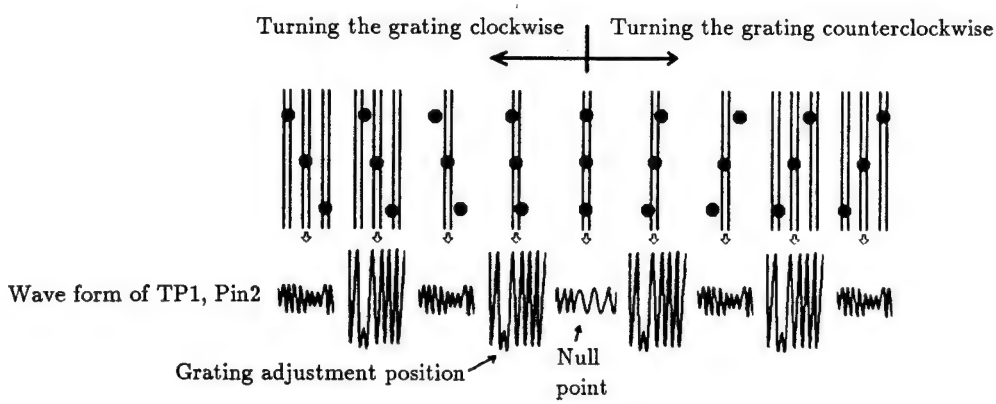
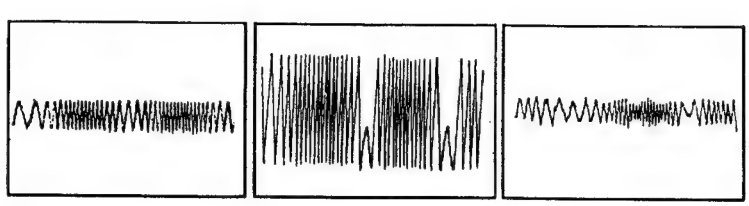


Figure 3



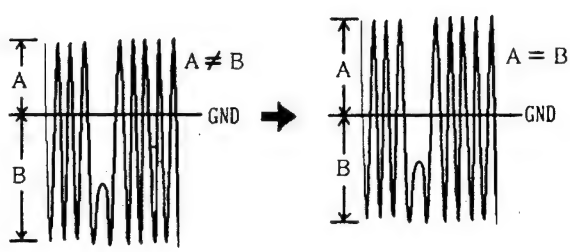
Null point wave form | Maximum amplitude wave form | Wave form other than the null point

3. Tracking error balance adjustment

● Objective ● Symptom when out of adjustment	To correct for the variation in the sensitivity of the tracking photodiode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP 1, Pin 2 (TRK ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open VR 102 (TRK BAL) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R = 35 mm) with the TRACK FWD ⏭ or REV ⏮ key.
2. Press the OUTPUT key, then the PLAY key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR 102 (TRK BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP 1 Pin 2 (TRK ERR) are the same (in other words, so that there is no DC component).



When there is a DC component

When there is no DC component

4. Pickup radial/tangential tilt adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken ; some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP 1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the TRACK FWD ⏭ or REV ⏮ key to move the pickup to halfway across the disc (R = 35 mm). Press the OUTPUT key, the PLAY ▷ key, then the PAUSE ⏸ key in that order to close the focus servo then the spindle servo and put the player into play mode.

2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.

3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).

4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note : Radial and tangential mean the directions relative to the disc shown in Figure 4.

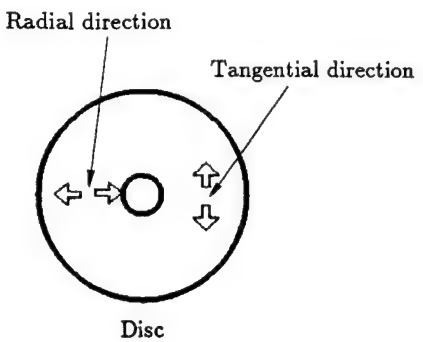
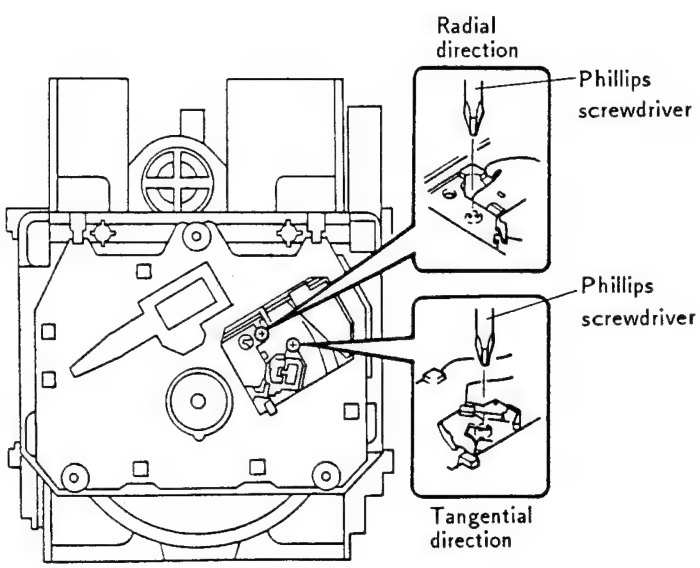


Figure 4



Adjustment locations

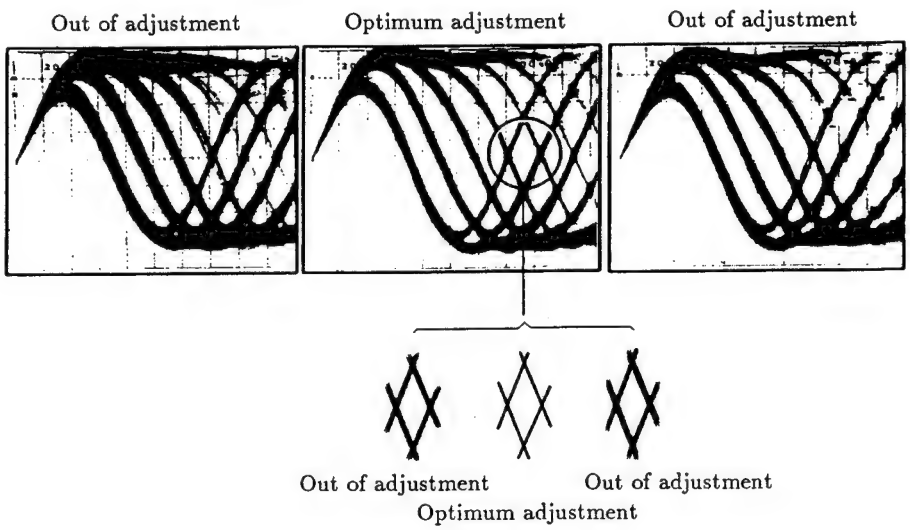


Figure 5 Eye pattern

5. RF level adjustment

● Objective ● Symptom when out of adjustment	To optimize the playback RF signal amplitude No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP 1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play VR 1 (laser power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R = 35 mm) with the TRACK FWD ⏭ or REV ⏮ key, then press the OUTPUT key, then the PLAY ▷ key in that order to close the respective servos and put the player into play mode..

2. Adjust VR 1 (laser power) so that the RF signal amplitude is 1.2 Vp-p±0.1 V.

6. Focus servo loop gain adjustment

● Objective	To optimize the focus servo loop gain		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy		
● Measurement instrument connections	See Figure 6. [Settings] CH 1 CH 2 20 mV/division 5 mV/division X-Y mode	● Player state	Test mode, play
		● Adjustment location	VR 152 (FCS GAN)
		● Disc	YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.

2. Press the TRACK FWD ⏭ or REV ⏮ key to move the pickup to halfway across the disc (R = 35 mm), then press the OUTPUT key, the PLAY ▷ key, then the PAUSE ⏸ key in that order to close the corresponding servos and put the player into play mode.

3. Adjust VR 152 (FCS GAN) so that the Lissajous wave form is symmetrical about the X axis and the Y axis.

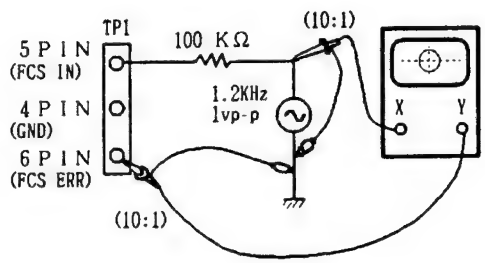
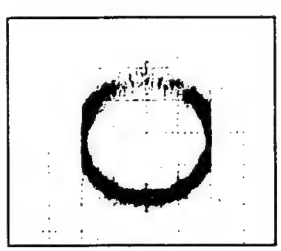


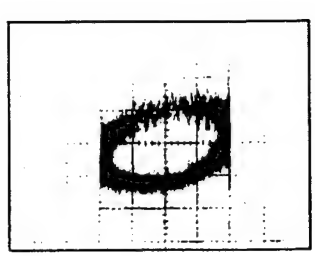
Figure 6

Focus Gain Adjustment

Higher gain



Optimum gain



Lower gain

7. Tracking servo loop gain adjustment

● Objective	To optimize the tracking servo loop gain		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7. [Settings] CH 1 CH 2 50 mV/division 50 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR 151 (TRK GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.

2. Press the TRACK FWD ⏭ or REV ⏮ key to move the pickup to halfway across the disc (R = 35 mm), then press the OUTPUT key, the PLAY ▷ key, then the PAUSE ⏸ key in that order to close the corresponding servos and put the player into play mode.

3. Adjust VR 151 (TRK GAN) so that the Lissajous wave form is symmetrical about the X axis and the Y axis.

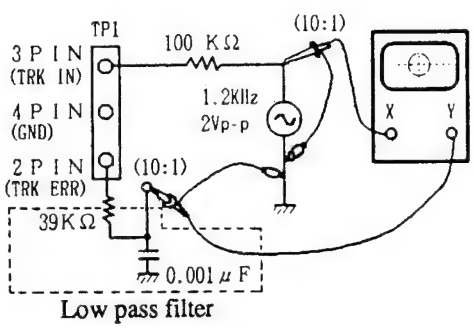
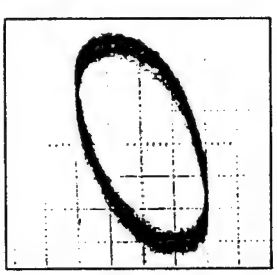
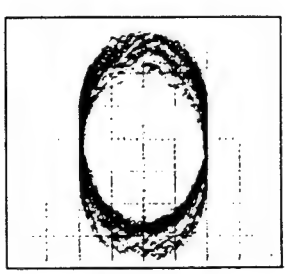


Figure 7

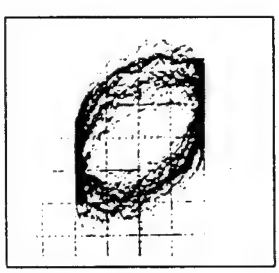
Tracking Gain Adjustment



Higher gain



Optimum gain



Lower gain

8. Focus error signal(focus S curve)verification

● Objective ● Symptom when out of adjustment	To judge whether the pickup is O.K. or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the wave form for the focus error signal.		
● Measurement instrument connections	Connect the oscilloscope to TP 1 Pin 6 (FOCS ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP 1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the OUTPUT key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the OUTPUT key is pressed, press this key over and over until you have checked the waveform.

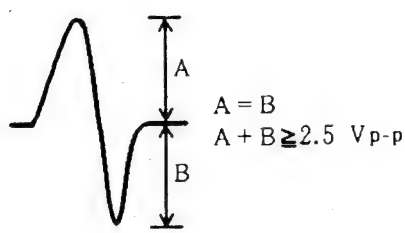


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustments have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR 1 is adjusted (laser power), the RF signal can not be brought up to the standard level.

6. RÉGLAGE

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctment en suivbant les démarches de réglage.

6-1. Points de réglage/Point et ordre de vérification

Etape	Point	Point d'essai	Emplacement du réglage
1	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS.ERR)	VR103 (FCS.OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2 (TRK.ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK.ERR)	VR102 (TRK.BAL)
4	Réglage d'inclinaison radiale/ tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, Vis de régrage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de boucle asservie de la mise au point	TP1, Broche 5 (FCS.IN) TP1, Broche 6 (FCS.ERR)	VR152 (FCS.GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK.IN) TP1, Broche 2 (TRK.ERR)	VR151 (TRK.GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS.ERR)	——

● Tableau des abbréviations
FCS.ERR : erreur de mise au point
FCS.OFS : décalage de mise au point
TRK.ERR: erreur d'alignement
TRK.BAL : équilibrage d'erreur d'alignement
FCS.GAN : gain de mise au point
TRK.GAN: gain d'alignement
FCS.IN : mise au point correcte
TRK.IN : alignement correct

6-2. Intruments de mesure et outils

1. Oscilloscope cathodique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Filtre passe-bas (39kΩ + 0,001 μF)
5. Résistance (100kΩ)
6. Outils conventionnels

6-3. Point d'essai et positions de réglage de la résistance variable

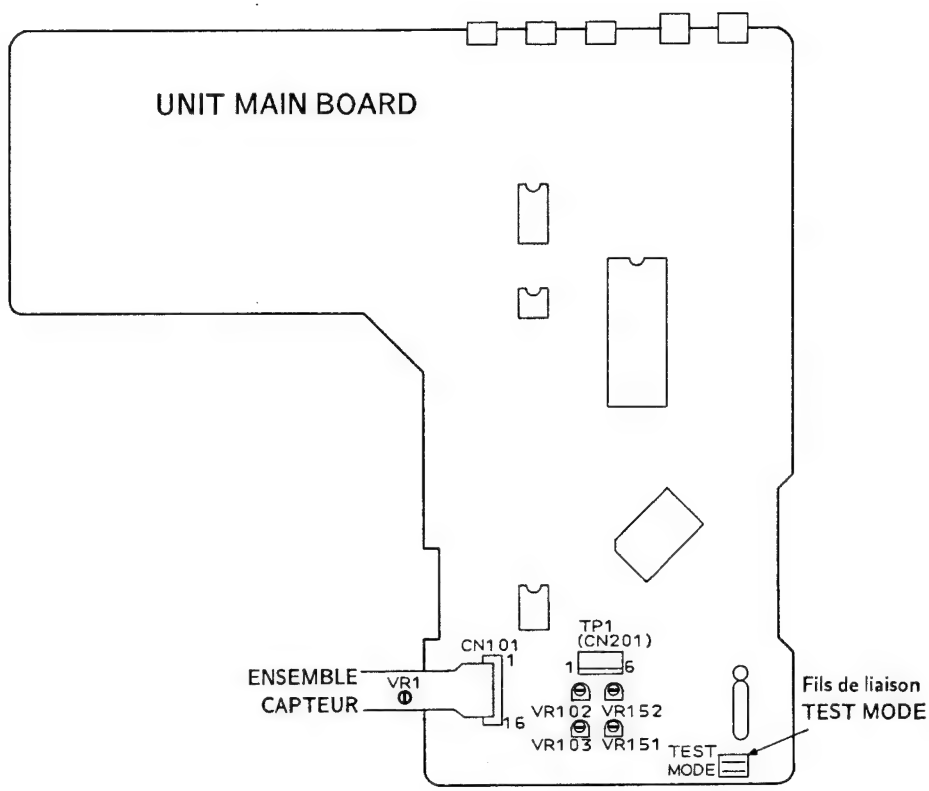


Figure 1 Emplacement des réglages

6-4. Remarques

1. Utiliser une sonde 10 : 1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10 : 1.

6-5. Mode d'essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire.
Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en mode d'essai]
Voici la manière de mettre le modèle en mode d'essai.

1. Commuter l'interrupteur d'alimentation sur arrêt.
2. Court-circuiter les fils de liaison du mode d'essai. (voir Figure 1).
3. Commuter l'interrupteur d'alimentation sur marche.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise sous tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]
Voici la procedure qui termine le mode d'essai.
1. Appuyer sur la touche STOP pour arreter toutes les operations.
2. Sur le panneau avant, commuter l'interrupteur d'alimentation sur arrêt.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la touche	Fonction en mode d'essai	Explications
	OUTPUT	Fermeture du circuit asservi de la mise au point	La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement. et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, se relvè, puis s'abaisse et se soulève, une deuxième fois et enfin, revient à sa position départ.
▷	PLAY	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
▯▯	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en cours de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.

Code	Nom de la touche	Fonction en mode d'essai	Explications
⏮	TRACK REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie inteme du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en bouche fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
⏭	TRACK FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en bouche fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
□	STOP	Arrêt	Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougent pas lorsque cette touche est enclenchée.
⏏	OPEN/CLOSE	Ouverture/Fermeture du plateau à disque	Cette touche est de type à bascule et ouvre/freme alternativement le plateau. Le fait d'enfoncer cette touche quand le plateau est ouvert le ferme et vice versa.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.
Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

OUTPUT	Allume la diode laser et ferme le circuit servo de la mise au point.
⇩	
PLAY ▷	Démarre le moteur de rotation et ferme le circuit servo de la rotation.
⇩	
PAUSE ▯▯	Ferme le circuit servo de l'alignement.

Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du décalage de la mise au point

• Objectif	Règle le décalage CC de l'amplificateur d'erreur de mise au point.		
• Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR).	• Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
	[Réglages] 5 mV/division 10 ms/division mode CC	• Emplacement du réglage	VR103 (FCS OFS)
		• Disque	Aucun requis

[Marche à suivre]

Ajuster VR103 (FCS OFS) de façon que la tension à TP1 broche 6(FCS ERR) soit -150 ± 50 mV.

2. Réglage du réseau de diffraction

• Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste		
• Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR) via un filtre passe-bas. (Voir Figure 2)	• Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert
	[Réglages] 50 mV/division 5 ms/division mode CC	• Emplacement du réglage	Fente de réglage du réseau de diffraction du capteur
		• Disque	YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque(R=35mm) par la touche TRACK FWD ⏭ ou la touche REV ⏮.
2. Appuyer sur la touche OUTPUT, puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réscau de diffraction pour trouver le point zéro. Pour plus de déteils, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à partir du point zéro et régler le réscau de diffraction au premier point où l'amplitude de l'onde atteint son maximum.

   Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

   Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3Vc-c (quand un filtre passe-bas de 39kΩ + 0.001μF est utilisé). Si cette amplitude est extrêmement petite (2Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.
5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche TRACK REV ⏮, appuyer sur la touche PAUSE ⏸ et vérifier que le numéro de piste et la durée écoulée sont affchés sur le panneau avant. Si ces paramétres n'apparaissent pas ce momont, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réscau de diffraction.

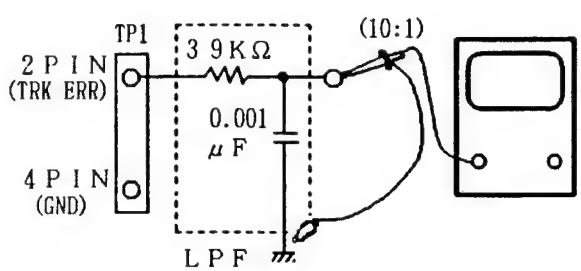
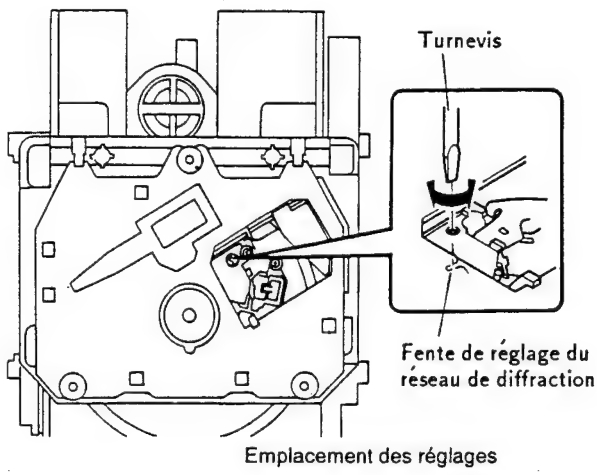


Figure 2



[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).

Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référence.

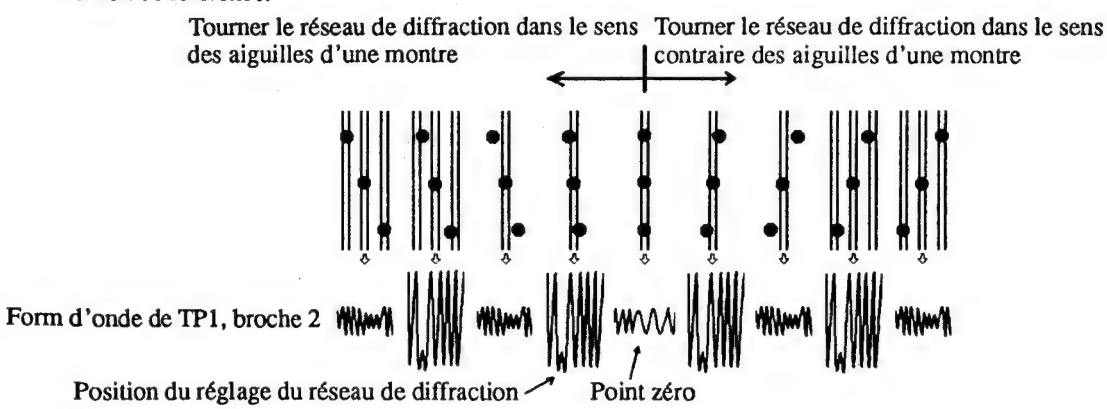
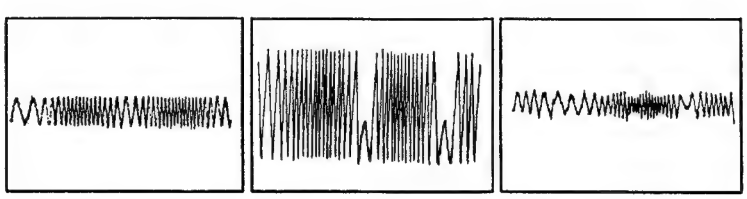


Figure 3



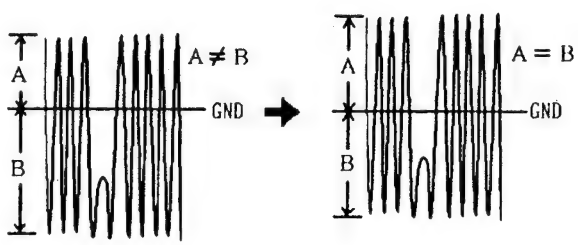
Forme d'onde du point zéro | Forme d'onde d'amplitude maximum | Forme d'onde autre que du point zéro

3. Réglage d'équilibrage d'erreur d'alignement

• Objectif	Pour corriger la variation de sensibilité de la photodiode d'alignement		
• Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. [Réglages] 50 mV/division 5 ms/division mode CC	• Etat du lecteur	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert
		• Emplacement du réglage	VR102 (TRK BAL)
		• Disque	YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque(R=35mm) par la touche TRACK FWD ⏭ ou la touche REV ⏮.
2. Appuyer sur la touche OUTPUT, puis sur la touche PLAY ▷, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC S'il n'y a pas de composant CC

4. Réglage d'inclinaison radiale/tangentielle du capteur

• Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent verticalement le disque et permettre ainsi la lecture optimum des signaux RF.		
• Symptôme quand déréglé	Son interrompu; certains disques peuvent être lus et pas d'autres.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF).	• Etat du lecteur	Mode d'essai, lecture
	[Réglages] 20 mV/division 200 ns/division mode CA	• Emplacement du réglage	Vis de réglage d'inclinaison radiale Vis de réglage d'inclinaison tangentielle
		• Disque	YEDS-7

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche TRACK FWD ⏭ ou la touche REV ⏮ pour déplacer le capteur à mi-chemin sur le disque (R=35mm).
   Appuyer sur la touche OUTPUT, PLAY ▷ et PAUSE ⏸ danse cet ordre, afin de fermer le circuit servo de la mise au point, puis celui de la rotation et placer le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clariement visible(Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.
   Remarque : "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.

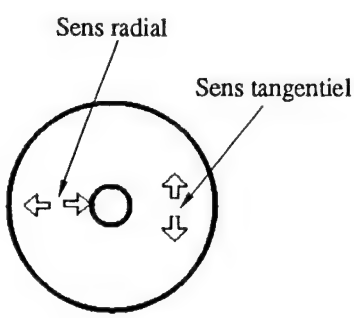
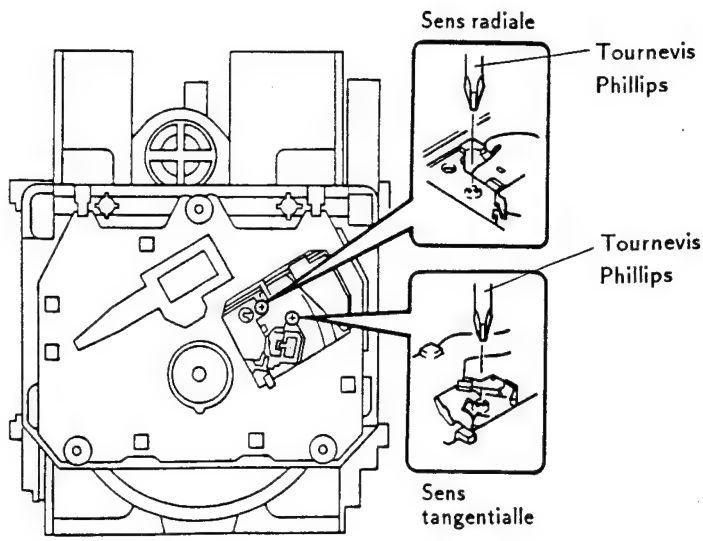


Figure 4



Emplacements des réglages

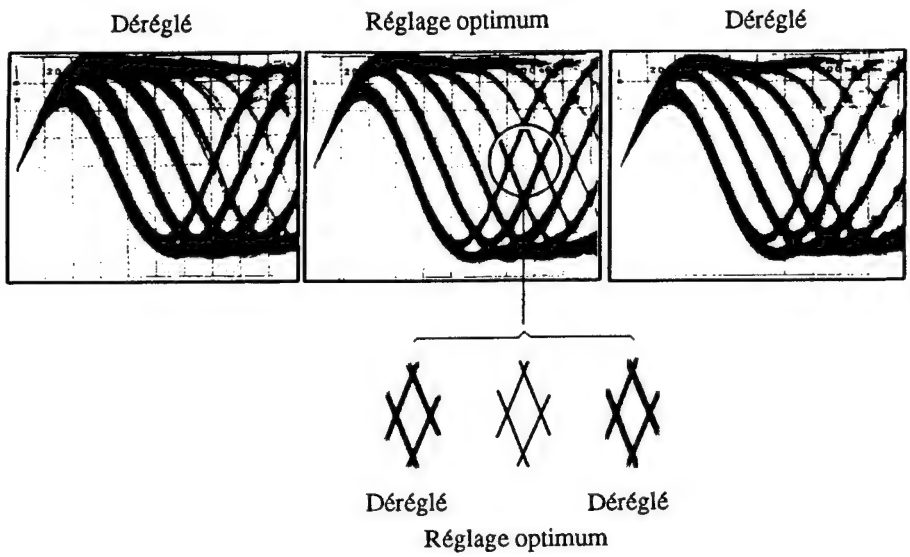


Figure 5 Motif en œil

5. Réglage du niveau RF (niveau RF)

• Objectif	Pour optimaliser l'amplitude du signal RF de lecture		
• Symptôme quand déréglé	Pas de lecture ni de recherche		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF).	• Etat du lecteur	Mode d'essai, lecture
	[Réglages] 50 mV/division 10 ms/division mode CA	• Emplacement du réglage	VR1 (alimentation du laser)
		• Disque	YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque(R=35mm) à l'aide la touche TRACK FWD ⏭ ou la touche REV ⏮. Ensuite, appuyer sur la touche OUTPUT puis sur la touche PLAY ▷, dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne 1,2 Vc-c ± 0,1 V.

6. Réglage de gain de boucle asservie de la mise au point

• Objectif	Pour optimaliser le gain de la boucle d'asservissement de la mise au point.		
• Symptôme quand déréglé	La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
• Raccordement des instruments de mesure	Voir Figure 6. [Réglages] CAN.1 CAN.2 20 mV/division 5 mV/division Mode X-Y	• Etat du lecteur • Emplacement du réglage • Disque	Mode d'essai, lecture VR152 (FCS GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK FWD ⏭ ou la touche REV ⏮ pour placer la capteur à mi-chemin sur le disque (R=35mm). Ensuite, appuyer sur la touche OUTPUT, la touche PLAY ▷, puis sur la touche PAUSE ⏸, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FSC GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

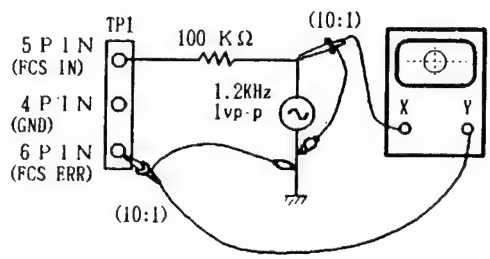
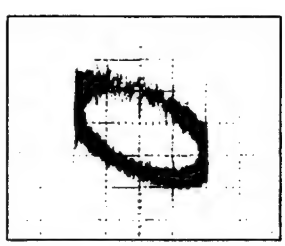
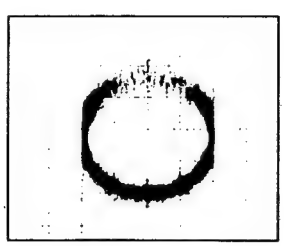


Figure 6

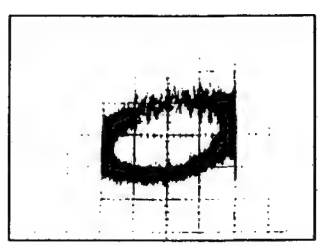
Adjustment de gain de mise au point



Gain Supérieur



Gain optimum



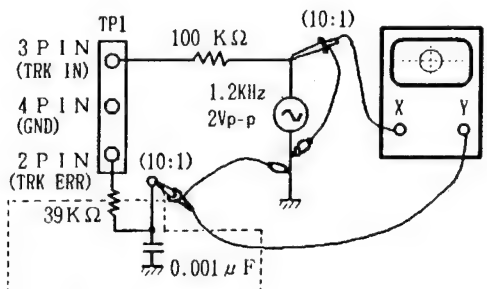
Gain inférieur

7. Réglage de gain de boucle asservie de l'alignement

• Objectif	Pour optimaliser le gain de la boucle d'asservissement de l'alignement.		
• Symptôme quand déréglé	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
• Raccordement des instruments de mesure	Voir Figure 7.	• Etat du lecteur	Mode d'essai, lecture
	[Réglages]	• Emplacement du réglage	VR151 (TRK GAN)
	CAN.1 CAN.2 50 mV/division 50mV/division Mode X-Y	• Disque	YEDS-7

[Marche à suivre]

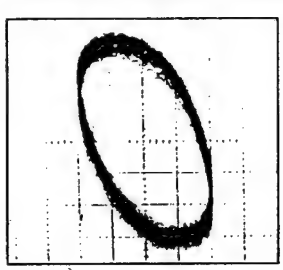
1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche TRACK FWD ⏭ ou la touche REV ⏮ pour placer la capteur à mi-chemin sur le disque (R=35mm). Ensuite, appuyer sur la touche OUTPUT, la touche PLAY ▷, puis sur la touche PAUSE ⏸, dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.



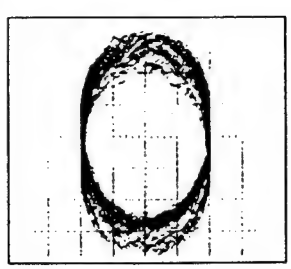
Filtre passe-bas

Figure 7

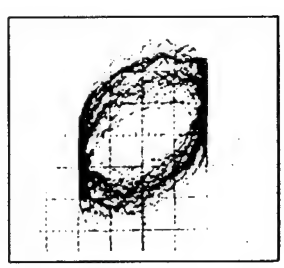
Adjustment de gain d'alignement



Gain Supérieur



Gain optimum



Gain inférieur

8. Vérification du signal d'erreur de la mise au point

• Objectif • Symptôme quand déréglé	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à partir de la forme d'onde du signal d'erreur de mise au point.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS ERR). [Réglages] 100 mV/division 5 ms/division mode CC	• Etat du lecteur • Emplacement du réglage • Disque	Mode de test, arrêt Aucun YEDS-7

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche OUTPUT et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche OUTPUT est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

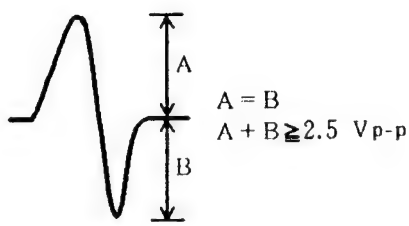


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

6. AJUSTE

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

6-1. Ítemes de ajuste/verificación y orden

Paso	Ítem	Punto de prueba	Lugar de ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6 (FCS.ERR)	VR103 (FCS.OFS)
2	Ajuste de retícula	TP1, Patilla 2 (TRK.ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimient	TP1, Patilla 2 (TRK.ERR)	VR102 (TRK.BAL)
4	Ajuste de la inclinación en sentido radial/tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1 (RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS.IN) TP1, Patilla 6 (FCS.ERR)	VR152 (FCS.GAN)
7	Ajuste de ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK.IN) TP1, Patilla 2 (TRK.ERR)	VR151 (TRK.GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6 (FCS.ERR)	———

● Tabla de abreviaturas

FCS.ERR : Error de enfoque
FCS.OFS : Descentramiento de enfoque
TRK.ERR : Error de seguimiento
TRK.BAL : Equilibrio de seguimient
FCS.GAN : Ganacia de enfoque
TRK.GAN: Ganacia de seguimiento
FCS.IN : Entrada de enfoque
TRK.IN : Entrada de seguimiento

6-2. Instrumentos y herramientas de medición

1. Osciloscopio de doble traza (Sonda de 10 : 1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Filtro de paso bajo (39k Ω, 0,001 μF)
5. Resistor (100k Ω)
6. Herramientas estándar

6-3. Ubicación de los puntos de prueba y los resistores variables de ajuste

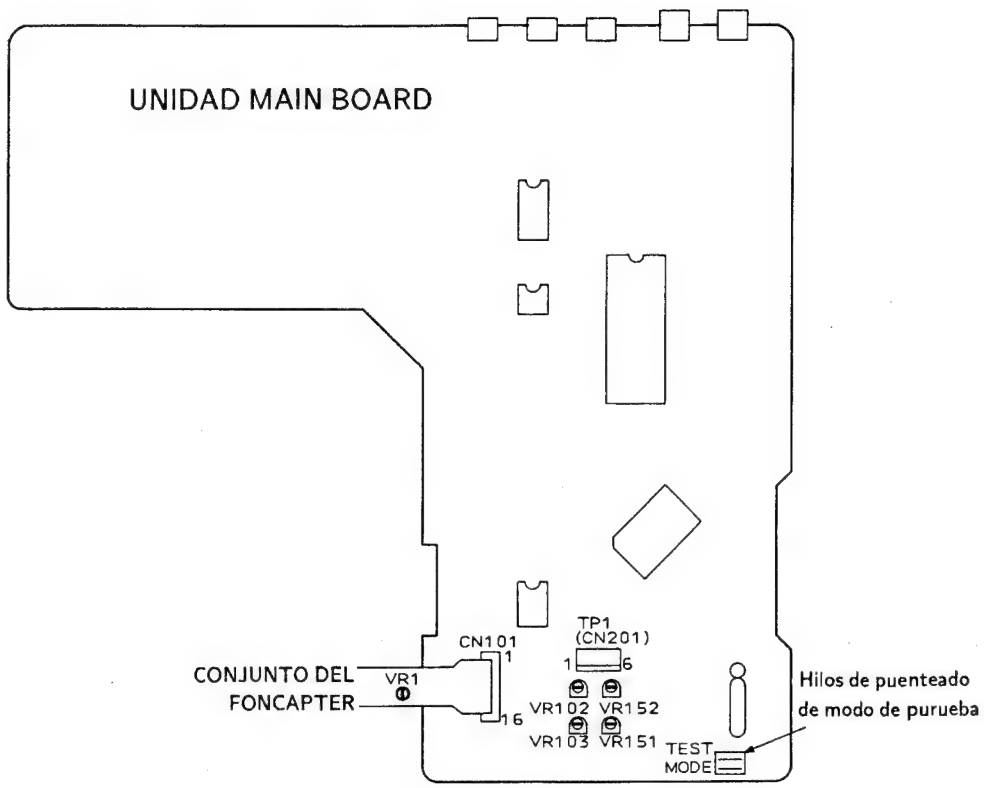


Figura 1 Lugares de ajuste

6-4. Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

6-5. Modo de prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.

1. Ponga en OFF el interruptor de alimentación.
2. Cortocircuite los hilos de puenteado de modo de prueba. (Consulte la figura 1.)
3. Ponga en ON el interruptor de alimentación.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siendo la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.
1. Presione la trecla STOP y cese todas las operaciones.
2. Ponga en OFF el interruptor de alimentación del panel frontal.

Código	Nombre de la tecla	Fonción en el mode de prueba	Explicación
	OUTPUT	Cierre del servo de enfoque	El diodo láser se encenderá y el actuador de enfoque se eleva, despué se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el ovjetivo se enfoque sobre el disco. Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque. Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se ve empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.
▷	PLAY	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado. Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima. Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
▯▯	PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de sequimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante (de acción alternativa) y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.

Código	Nombre de la tecla	Fonción en el mode de prueba	Explicación
⏮	TRACK REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el puto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
⏭	TRACK FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el puto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Inicializa y se para la rotacion del desco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
⏏	OPEN/CLOSE	Apertura/cierre de la bandeja del disco	Abrirá/cerrará la bandeja del disco. Esta tecla es baseulante de accion alternativa y abre/cierra la bandeja alternativamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.

A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.

OUTPUT ⏭	Hará que se encienda el diodo láser y cerrará el servo de enfoque.
⇓	
PLAY ▷	Pondrá en marcha el motor del eje y hará que se cierre el servo del eje.
⇓	
PAUSE ⏸	Cerrará el servo de seguimiento.

Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del descentramiento del enfoque

• Objetivo	Ajuste de la tensión de CC para el amplificador de error de enfoque.		
• Síntomas en caso de desajuste	El reproductor no enfoca y la señal de RF contiene perturbaciones.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6, (FCS ERR). [Ajustes] 5 mV/división 10 ms/división modo de CC	• Estado del reproductor	Modo de prueba, parado (con el interruptor de alimentación en ON)
		• Lugar de ajuste	VR103 (FCS OFS)
		• Disco	No es necesario

[Procedimiento]

Ajuste VR103 (FCS OFS) de forma que la tensión de CC de TP1, patilla 6, (FCS ERR) sea de -150 ± 50 mV.

2. Ajuste de retícula

• Objetivo	Alineación de los puntos del haz lasérico de generación de error de seguimiento al ángulo óptimo en la pista		
• Síntomas en caso de desajuste	La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2, (TRK ERR) a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC	• Estado del reproductor • Lugar de ajuste • Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto Ranura de ajuste de retícula del captor YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35mm) con la tecla TRACK FWD ⏭ o REV ⏮ de forma que la ranura de ajuste de la retícula quede en el borde exterior del disco, donce puede ajustarse.
2. Presione la tecla OUTPUT, y deupués la tecla PLAY ▷, por este orden, a fin de cerrar el servo de enfoque y desupués el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, cunsulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el destomillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.

Referencia: En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3Vp-p(cuando se emplee un filtro de paso bajo de $38k\Omega, 0.001\mu F$). Si esta amplitud es extremadamente pequeña (2Vp-p o menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustaria.

5. Devuelva el captor hasta la mitad más o menos del disco con la tecla TRACK REV ⏮, presione latecla PAUSE ⏸, y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

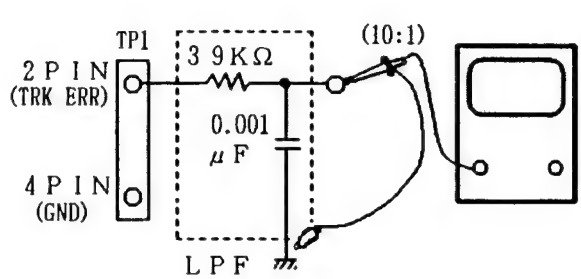
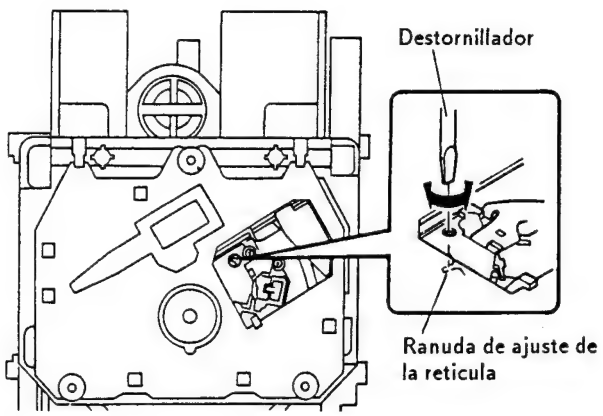


Figura 2



[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces lasércos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)

Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

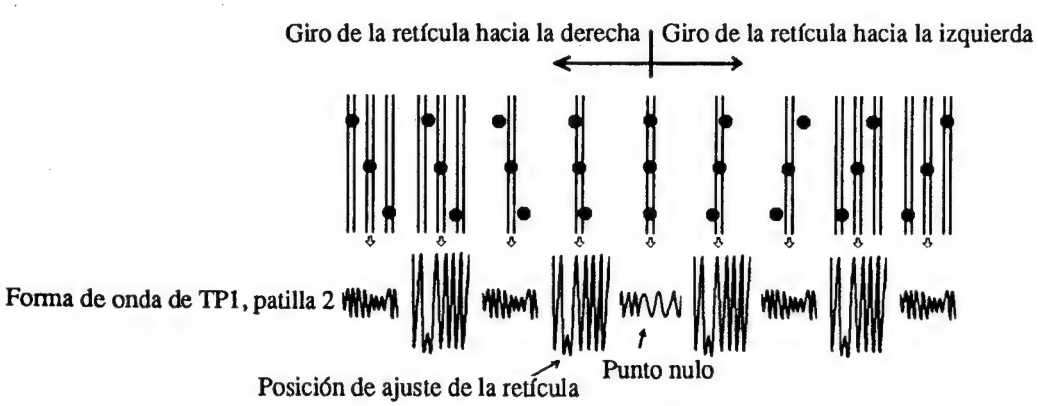
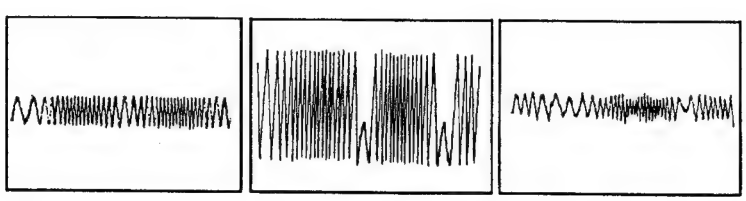


Figura 3



Forma de onda del punto nulo

Forma de onda de amplitud máxima

Forma de onda que no es el punto nulo

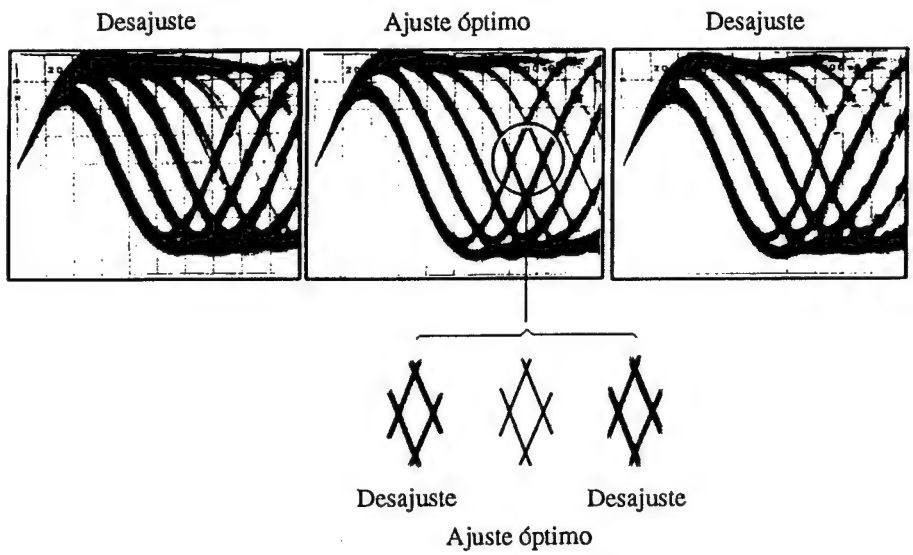


Figura 5 Patron optico

5. Ajuste del nivel de RF

• Objetivo	Optimización de la amplitud de la señal de RF de reproducción		
• Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1, (RF).	• Estado del reproductor	Modo de prueba, reproducción
	[Ajustes] 50 mV/división 10ms/división modo de CA	• Lugar de ajuste	VR1 (potencia de láser)
		• Disco	YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35mm) con la tecla TRACK FWD ⏭ o REV ⏮, presione la tecla OUTPUT, después la tecla PLAY ▷, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.

6. Ajuste de la ganancia del bucle del servo de enfoque

• Objetivo	Optimización de la ganancia del bucle del servo de enfoque		
• Síntomas en caso de desajuste	La reproducción no se inicia o el actuador de enfoque produce ruido.		
• Conexión de los instrumentos de medición	Consulte la figura 6.	• Estado del reproductor	Modo de prueba, reproducción
	[Ajustes]	• Lugar de ajuste	VR152 (FCS GAN)
	CH1 20 mV/división CH2 5 mV/división Modo X - Y	• Disco	YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK FWD ⏭ o REV ⏮ para mover el captor hasta la mitad del disco(R=35mm), y después presione la tecla OUTPUT, la tecla PLAY ▷, y después la tecla PAUSE ⏸, por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

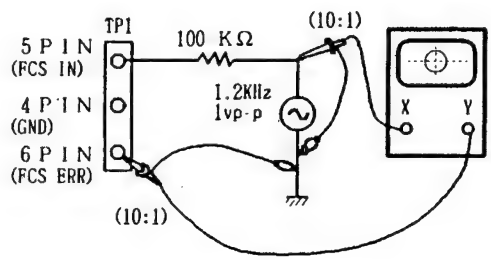
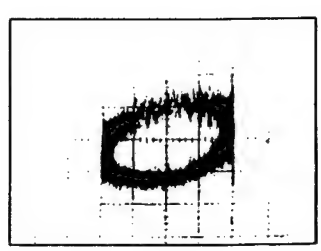


Figura 6

Ajuste de la ganancia de enfoque

Ganancia superior

Ganancia óptima



Ganancia inferior

7. Ajuste de la ganancia del bucle del servo de seguimiento

• Objetivo	Optimización de la ganancia del bucle del servo de seguimiento		
• Síntomas en caso de desajuste	La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
• Conexión de los instrumentos de medición	Consulte la figura 7. [Ajustes] CH1 CH2 50 mV/división 50mV/división Modo X - Y	• Estado del reproductor • Lugar de ajuste • Disco	Mode de prueba, reproducción VR151 (TRK GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla TRACK FWD ⏭ o REV ⏮ para mover el captor hasta la mitad del disco(R=35mm), y después presione la tecla OUTPUT, la tecla PLAY ▷, y la tecla PAUSE ⏸, por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

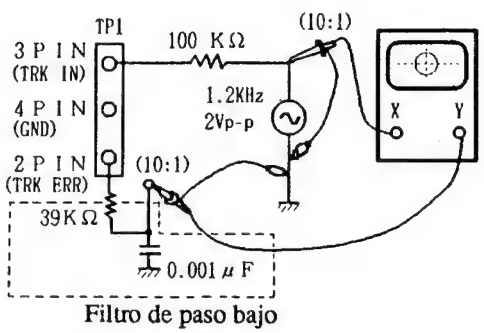
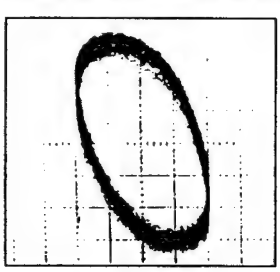
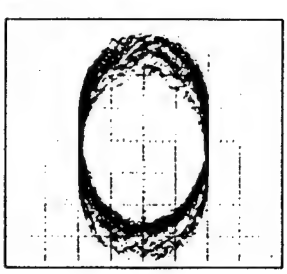


Figura 7

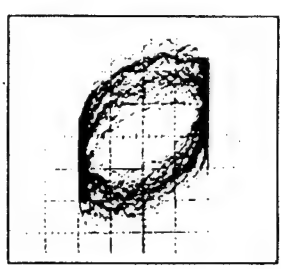
Ajuste de la ganancia de seguimiento



Ganancia superior



Ganancia óptima



Ganancia inferior

8. Verificación de la señal de error de enfoque (curva S de enfoque)

• Objetivo • Síntomas en caso de desajuste	Juzgar si el captor est'a bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6, (FCS ERR). [Ajustes] 100 mV/división 5 ms/división modo de CC	• Estado del reproductor • Lugar de ajuste • Disco	Modo de prueba, parada Ninguno YEDS-7

[Procedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla OUTPUT y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla OUTPUT, presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

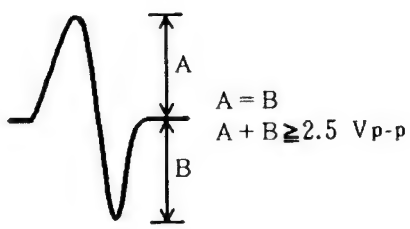


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguientes es posible que haya algo erróneo en el captor.

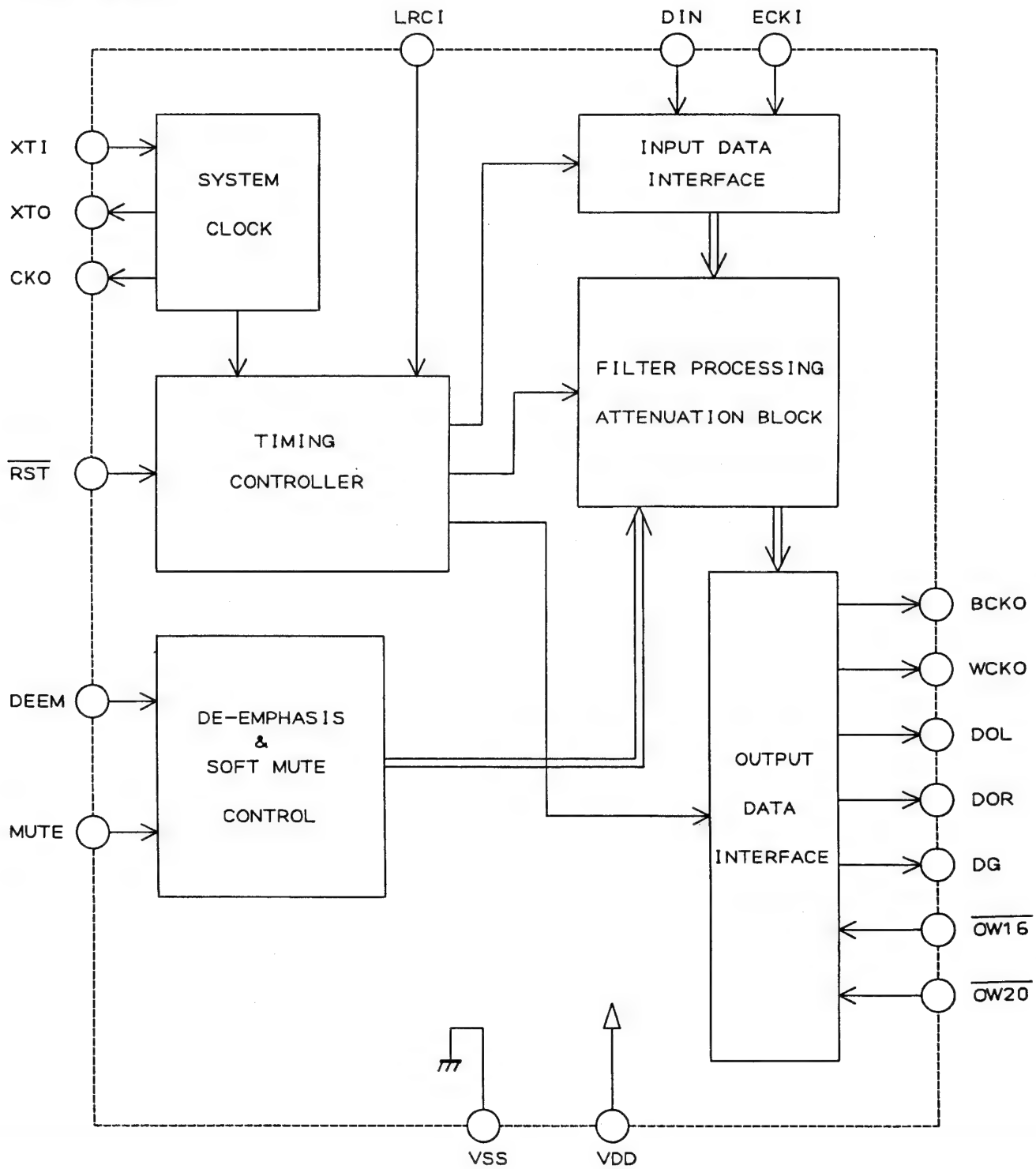
1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

7. IC INFORMATION

■SM5840CP

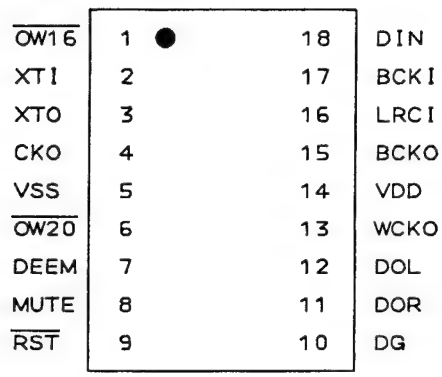
Digital Filter

- **Block Diagram**



• Pin Assignment

(TOP VIEW)



• Pin Function

No.	Pin name	I/O	Function
1	$\overline{OW16}$	I	Output bit rate select input 1. (*1)
2	XTI	I	Oscillator input.
3	XTO	O	Oscillator output.
4	CKO	O	Clock output. (Frequency is the same as XTI.)
5	V_{SS}	—	GND terminal.
6	$\overline{OW20}$	I	Output bit rate select input 2.(*1) Refer to $\overline{OW16}$.
7	DEEM	I	De-emphasis sygnal input. L : De-emphasis OFF, H : De-emphasis ON
8	MUTE	I	Mute signal input. L : Soft mute OFF, H : Soft mute ON
9	$\overline{RST}$	I	System reset signal input.(Initialize)
10	DG	O	De-glitch output.
11	DOR	O	Data output for R ch.
12	DOL	O	Data output for L ch.
13	WCKO	O	Word clock output.
14	V_{DD}	—	Power supply input(+5V)
15	BCKO	O	Bit clock output.
16	LRCI	I	Sampling rate(fs) clock input for input data.
17	BCKI	I	Bit clock input
18	DIN	I	Data input

*1 : Selection of output bit rate.

Settings		$\overline{OW20}$	
		H	L
$\overline{OW16}$	H	18bit output Noise shaper ON	20bit output Noise shaper ON
	L	16 bit output Noise shaper ON	16bit output Noise shaper OFF (test mode)

8. FOR PD-9700/KC, HEM, HB AND SD TYPES

8.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES :

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

The PD-9700/KC, HEM, HB and SD types are the same as the PD-41/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		PD-41 /KU type	PD-9700 /KC type	PD-9700 /HEM type	PD-9700 /HB type	PD-9700 /SD type	
	FL sheet	PAM1514	PAM1514	PAM1251	PAM1251	PAM1514	
	33P F.F.C/30V	PDD1094	PDD1094	.....	.....	.....	
	31P F.F.C/30V	.....	.....	PDD1092	PDD1092	PDD1092	
	Cord with plug(mini plug)	PDE-319	PDE-319	.....	.....	.....	
	Front panel assembly	PEA1167	PEA1166	PEA1166	PEA1166	PEA1166	
	CD packing case	PHG1677	PHG1670	PHG1670	PHG1670	PHG1670	For packing
	Recycle label	PRW1253	PRW1253	.....	.....	.....	
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1036	PDG1013	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	CM-22B	
⚠	Voltage selector	.....	.....	.....	.....	PSB1002	
⚠	Power transformer(8VA)	PTT1166	PTT1166	PTT1167	PTT1167	PTT1168	
⚠	Power transformer(15VA)	PTT1206	PTT1206	PTT1207	PTT1207	PTT1208	
⚠◉	MAIN BOARD assembly	PWZ2150	PWZ2150	PWZ2151	PWZ2153	PWZ2151	
⚠	PRIMARY BOARD assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
⚠◉	ANALOG BOARD assembly	PWM1490	PWM1490	PWM1490	PWM1492	PWM1490	
◉	FUNCTION A BOARD assembly	PWZ2168	PWZ2168	PWZ2169	PWZ2169	PWZ2169	
	FUNCTION B BOARD assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
	Operating instructions (German/Italian/Dutch/Swedish /Spanish/Portuguese)	.....	.....	PRF1048	.....	.....	

MAIN BOARD ASSEMBLY(PWZ2151 and PWZ2153)

The MAIN BOARD assemblies (PWZ2151 and PWZ2153) are the same as the MAIN BOARD assembly (PWZ2150) with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		PWZ2150	PWZ2151	PWZ2153	
	D391-D394	1SS254	.....	.....	
	C391	CGCYX103K25	.....	.....	
	C392	CCCSL101J50	.....	.....	
	R391	RD1/6PM244J	.....	.....	
	R392	RD1/6PM102J	.....	.....	
	CN351	HLEM33S	HLEM31S	HLEM31S	
	JA391,JA392	RKN1004	.....	.....	

PRIMARY BOARD ASSEMBLY

The PRIMARY BOARD assemblies of PD-9700/KC, HEM, HB and SD are the same as the PRIMARY BOARD assembly of PD-41/KU for the service supply parts.

ANALOG BOARD ASSEMBLY(PWM1492)

The ANALOG BOARD assembly (PWM1492) is the same as the ANALOG BOARD assembly (PWM1490) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWM1490	PWM1492	
	L540-L547	PTH1010	.....	

FUNCTION A BOARD ASSEMBLY(PWZ2169)

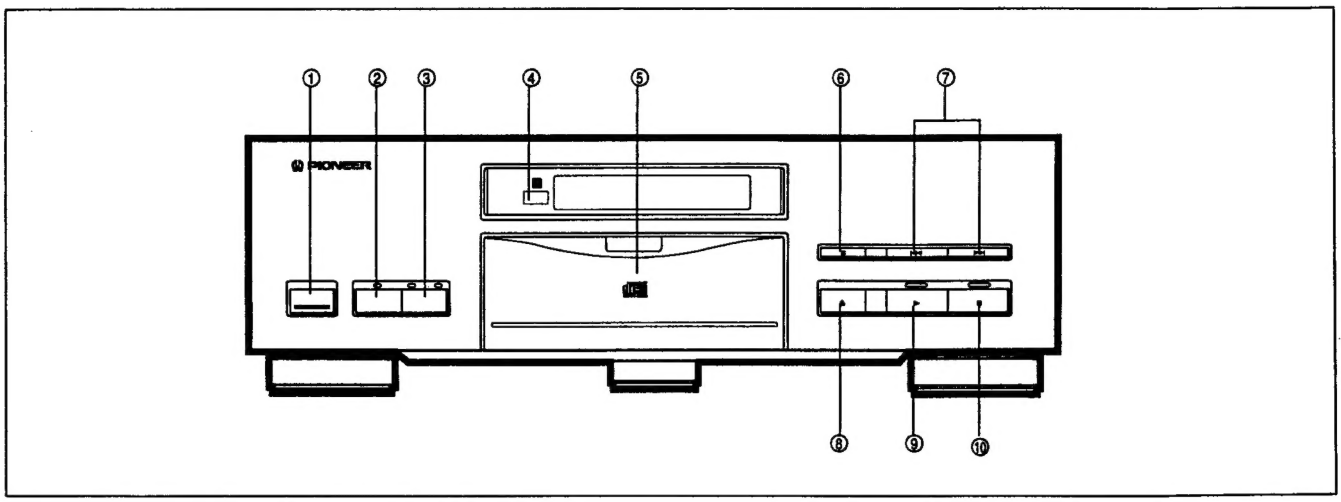
The FUNCTION A BOARD assembly (PWZ2169) is the same as the FUNCTION A BOARD assembly (PWZ2168) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ2168	PWZ2169	
	CN401	HLEM33R	HLEM31R	

FUNCTION B BOARD ASSEMBLY

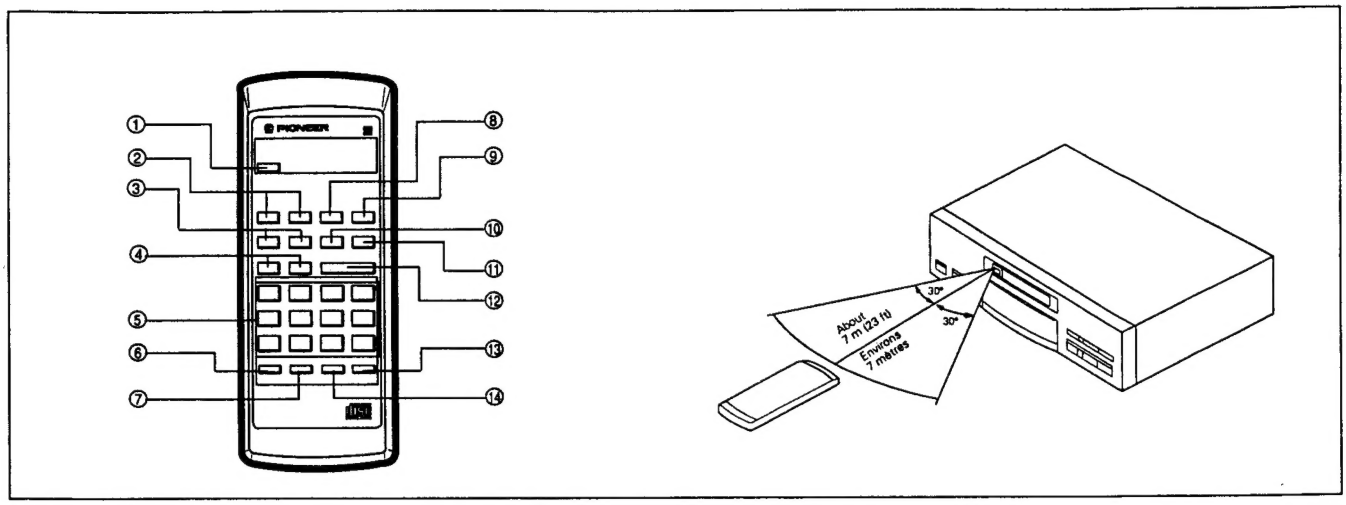
The FUNCTION B BOARD assemblies of PD-9700/KC, HEM, HB and SD are the same as the FUNCTION B BOARD assembly of PD-41/KU for the service supply parts.

9. PANEL FACILITIES



FRONT PANEL

① POWER switch
② DISPLAY button and OFF indicator
③ OUTPUT button and DIGITAL/ANALOG indicators
④ Remote sensor
Receives the signal from the remote control unit.
⑤ Disc tray
⑥ STOP button (■)
⑦ TRACK search buttons (|◄◄/►►|)
⑧ OPEN/CLOSE button (⏏)
⑨ PLAY button (►) and indicator
⑩ PAUSE button (II) and indicator



REMOTE CONTROL UNIT

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① OPEN/CLOSE button (⏏)
② INDEX buttons (⟵ / ⟶)
③ MANUAL search buttons (◀◀ / ▶▶)
④ TRACK search buttons (⏮ / ⏭)
⑤ Track number/Digit buttons (1-10, +10, ≧ 20)
⑥ PGM (Program) button
⑦ CHECK button
⑧ REPEAT button
⑨ RANDOM PLAY button
⑩ PAUSE button (⏸)
⑪ STOP button (■)
⑫ PLAY button (▶)
⑬ TIME button
⑭ CLEAR button

REMOTE CONTROL OPERATIONS

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

10. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European model ..... AC 220 - 230 V, 50/60 Hz
U.K. and Australian models ..... AC 230 - 240 V, 60 Hz
U.S. and Canadian models ..... AC 120 V, 60Hz
Other models ..... AC 110/120 - 127/220/240 V (Switchable), 50/60 Hz
Power consumption ..... 22 W
Operating temperature ..... +5°C - +35°C +41°F - +95°F
Weight ..... 8.0 kg (17 lb, 10 oz)
External dimensions ..... 420(W) X 330(D) X 130(H) mm 16-9/16(W) X13(D) X 5-2/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 111 dB or more (EIAJ)
Dynamic range ..... 98 dB or more (EIAJ)
Channel separation ..... 107 dB or more (EIAJ)
Harmonic distortion ..... 0.002% or less (EIAJ)
Output voltage 2.0V
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Unbalanced type audio line output jacks
Optical and coaxial digital output jacks
Control input/output jacks (U.S. and Canadian models only)
CD-DECK SYNCHRO jack

4. Functions

Basic operation buttons
- PLAY, PAUSE, STOP

Search function
- Direct play
- Track search
- Manual search
- Index search
- Time location

Programming
- Maximum 24 steps
- Pause
- Program check/correction
- Program clear (single track or all tracks)

Repeat functions
- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat
- Program random play repeat

Random play (repeat also available)

Switching display
Time consumed, remaining time (track/disc), and total time

Timer start

5. Accessories

- Remote control unit 1
- Size AAA/R03/dry batteries 2
- Control cord (U.S. and Canadian models only) 1
- Output cable 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.